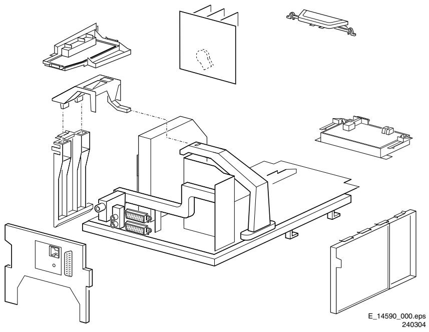
Colour Television **Chassis**

EM5.2E

AA

Service
Service
Service



Service Manual

Contents **Page**

1. Technical Specifications, Connections, and Chassis Overview 2
2. Safety Instructions, Warnings, and Notes 5
3. Directions for Use 7
4. Mechanical Instructions 8
5. Service Modes, Error Codes, and Faultfinding 12
6. *Block Diagrams, Test Point Overviews, and Waveforms*
   Wiring Diagram 23
   Block Diagram Supply and Deflection 24
   Testpoint Overview LSP and CRT Panel 25
   Block Diagram Video 26
   Testpoint Overview SSB 27
   Block Diagram Audio 1 (excl. Wireless Audio Details) 28
   I²C-IC Overview 29
   Supply Lines Overview 30
7. *Circuit Diagrams and PWB Layouts* *Diagram* *PWB*
   Main Supply (Diagram A1) 31 40-45
   Stand-by Supply (Diagram A2) 32 40-45
   Line Deflection (Diagram A3) 33 40-45
   Frame Deflection & E/W Drive (Diagram A4) 34 40-45
   Rotation Circuitry (Diagram A5) 35 40-45
   Audio Amplifier (Diagram A6) 36 40-45
   Tuner SIMM connector (Female) (Diagram A8) 37 40-45
   Receiver (Diagram A9) 38 40-45
   Front (Diagram A10) 38 40-45
   Inputs/Outputs (Diagram A11) 39 40-45
   SIMM connector (Male) (Diagram B1) 46 56-61
   IF, I/O Videoprocessing (Diagram B2) 47 56-61
   PICNIC (Diagram B3A) 48 56-61
   Falconic (FEM) (Diagram B3B) 49 56-61
   Eagle (Diagram B3C) 50 56-61
   HOP (Diagram B4) 51 56-61

Contents **Page**

   OTC (Diagram B5A) 52 56-61
   Anti Moiré (Diagram B5B) 53 56-61
   Audio Demodulator (Diagram B6) 54 56-61
   Headphone Amplifier (Diagram B10) 55 56-61
   Side I/O Panel (PV02) (Diagram D) 62 63
   Side I/O Panel (FL13B) (Diagram D) 64 65
   Top Control Panel (PV02) (Diagram E) 66 66
   Top Control Panel (FL13B) (Diagram E) 67 68
   CRT Panel (Diagram F) 69 70
   DC Shift Panel (Diagram G) 71 71
   I/O 3rd SCART Panel (PV02) (Diagram H) 72 73
   VDAF + 2nd Orders Panel (Diagram I) 74 75
   Mains Switch Panel (PV02) (Diagram J) 76 77
   Mains Switch Panel (FL13B) (Diagram J) 78 79
8. Alignments 81
9. Circuit Descriptions 88
   Abbreviation List 92
   IC Data Sheets 94
10 Spare Parts List 95
11 Revision List 105

©Copyright 2004 Philips Consumer Electronics B.V. Eindhoven, The Netherlands. All rights reserved. No part of this publication may be reproduced, stored in a retrieval system or transmitted, in any form or by any means, electronic, mechanical, photocopying, or otherwise without the prior permission of Philips.

Published by WO 0472 Service PaCE Printed in the Netherlands Subject to modification EN 3122 785 14590

PHILIPS

1. Technical Specifications, Connections, and Chassis Overview

Index of this chapter:
1.1 Technical Specifications
1.2 Connection Overview
1.3 Chassis Overview

Note: Figures below can deviate slightly from the actual situation, due to the different set executions.

1.1 Technical Specifications

1.1.1 Vision

Display type	: CRT, Real Flat
Screen sizes	: 28” (70 cm), 16:9
	: 29” (72 cm), 4:3
	: 32" (82 cm), 16:9
Tuning system	: PLL
Colour systems	: PAL B/G, D/K, I
	: SECAM B/G, D/K, L/L’
Video playback	: NTSC 3.58
	: NTSC 4.43
	: NTSC Play Back
Channel selections	: 100 presets
	: UHF
	: VHF
	: Hyper-band
	: S-band
Aerial input	: 75 ohm, Coax
	: IEC-type

1.1.2 Sound

Sound systems	: FM/FM B/G, Czech
	: NICAM B/G, D/K, I, L
Maximum power	: 4 x 15 W rms (int.)

1.1.3 Miscellaneous

Mains voltage	: 220 - 240 V_ac
Mains frequency	: 50 / 60 Hz
Ambient temperature	: +5 to +45 °C
Maximum humidity	: 90 % R.H.

Power consumption	
- Normal operation	: ≈ 130 W
- Standby	: < 1 W

1.2 Connection Overview

Note: The following connector color abbreviations are used (acc. to DIN/IEC 757):
Bk= Black, Bu= Blue, Gn= Green, Gy= Grey, Rd= Red, Wh= White, and Ye= Yellow.

1.2.1 Top Control and Front / Side Connections

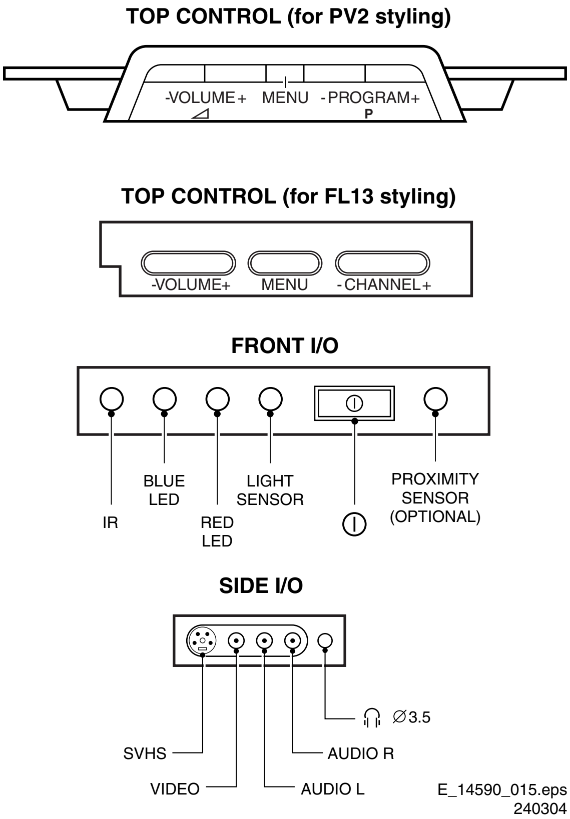

TOP CONTROL (for PV2 styling)
-VOLUME+
MENU
-PROGRAM+
P
TOP CONTROL (for FL13 styling)
-VOLUME+
MENU
-CHANNEL+
FRONT I/O
IR
BLUE LED
RED LED
LIGHT SENSOR
PROXIMITY SENSOR (OPTIONAL)
SIDE I/O
Ø3.5
SVHS
VIDEO
AUDIO L
AUDIO R
E_14590_015.eps
240304

Figure 1-1 Top control and Front / Side connections

S-Video: In

1	- Ground	Gnd	⏚
2	- Ground	Gnd	⏚
3	- Y	1 V_pp / 75 ohm	➔
4	- C	0.3 V_pp / 75 ohm	➔

Cinch: In

Ye	- Video - CVBS	1 V_pp / 75 ohm	➔◎
Wh	- Audio - L	0.5 V_rms / 10 kohm	➔◎
Rd	- Audio - R	0.5 V_rms / 10 kohm	➔◎

Mini Jack: Headphone - Out

	- Headphone	32 - 600 ohm / 10 mW	🎧

1.2.2 Rear Connections

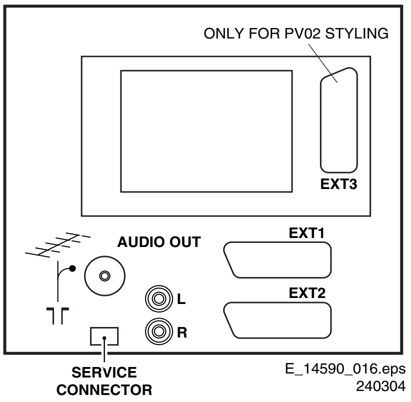

ONLY FOR PV02 STYLING
EXT3
AUDIO OUT
EXT1
EXT2
L
R
SERVICE CONNECTOR
E_14590_016.eps
240304

Figure 1-2 Rear View

Aerial - In

	- IEC-type	Coax, 75 ohm	⊤

Cinch: Audio - Out

Re	- Audio - R	0.5 V_rms / 1 kohm	⊖▸◎
Wh	- Audio - L	0.5 V_rms / 1 kohm	⊖▸◎

External 1: RGB/YUV and CVBS - In/Out

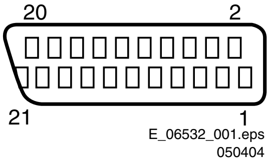


Figure 1-3 SCART connector

1	- Audio - R	0.5 V_rms / 1 kohm	⊖▸
2	- Audio - R	0.5 V_rms / 10 kohm	⊕
3	- Audio - L	0.5 V_rms / 1 kohm	⊖▸
4	- Audio - gnd	Ground	⏚
5	- Blue - gnd	Ground	⏚
6	- Audio - L	0.5 V_rms / 10 kohm	⊕
7	- Blue/U - in	0.7 V_pp / 75 ohm	⊕
8	- CVBS - status	0 - 2 V: INT 4.5 - 7 V: EXT 16:9 9.5 - 12 V: EXT 4:3	⊕
9	- Green - gnd	Ground	⏚
10	- n.c.		
11	- Green/Y - in	0.7 V_pp / 75 ohm	⊕
12	- n.c.		
13	- Red - gnd	Ground	⏚
14	- FBL - gnd	Ground	⏚
15	- Red/V - in	0.7 V_pp / 75 ohm	⊕
16	- Status / FBL	0 - 0.4 V: INT 1 - 3 V: EXT / 75 ohm	⊕
17	- Video	Ground	⏚
18	- Video	Ground	⏚
19	- CVBS - out	1 V_pp / 75 ohm	⊖▸
20	- CVBS - in	1 V_pp / 75 ohm	⊕
21	- Shielding	Ground	⏚

External 2: CVBS and SVHS - In (for video recorder)

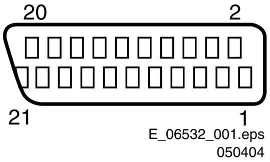


Figure 1-4 SCART connector

1	- Audio - R	0.5 V_rms / 1 kohm	⊖▸
2	- Audio - R	0.5 V_rms / 10 kohm	⊕
3	- Audio - L	0.5 V_rms / 1 kohm	⊖▸
4	- Audio - gnd	Ground	⏚
5	- Blue - gnd	Ground	⏚
6	- Audio - L	0.5 V_rms / 10 kohm	⊕
7	- C - out	0.7 V_pp / 75 ohm	⊖▸
8	- CVBS - status	0 - 2 V: INT 4.5 - 7 V: EXT 16:9 9.5 - 12 V: EXT 4:3	⊕
9	- Green - gnd	Ground	⏚
10	- Easylink	(P50)	⊕
11	- n.c.		
12	- n.c.		
13	- Red - gnd	Ground	⏚
14	- FBL - gnd	Ground	⏚
15	- C - in	0.7 V_pp / 75 ohm	⊕
16	- n.c.		
17	- Video	Ground	⏚
18	- Video	Ground	⏚
19	- CVBS - out	1 V_pp / 75 ohm	⊖▸
20	- Y / CVBS - in	1 V_pp / 75 ohm	⊕
21	- Shielding	Ground	⏚

External 3: RGB and CVBS - In (depends on type number)

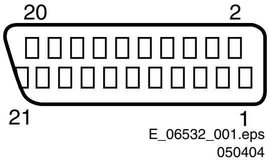


Figure 1-5 SCART connector

1	- n.c.		
2	- Audio - R	0.5 V_rms / 10 kohm	⊕
3	- n.c.		
4	- Audio - gnd	Ground	⏚
5	- Blue - gnd	Ground	⏚
6	- Audio - L	0.5 V_rms / 10 kohm	⊕
7	- Blue - in	0.7 V_pp / 75 ohm	⊕
8	- CVBS - status	0 - 1.3 V: INT 4.5 - 7 V: EXT 16:9 9.5 - 12 V: EXT 4:3	⊕
9	- Green - gnd	Ground	⏚
10	- n.c.		
11	- Green - in	0.7 V_pp / 75 ohm	⊕
12	- n.c.		
13	- Red - gnd	Ground	⏚
14	- FBL - gnd	Ground	⏚
15	- Red - in	0.7 V_pp / 75 ohm	⊕
16	- Status / FBL	0 - 0.4 V: INT 1 - 3 V: EXT / 75 ohm	⊕
17	- Video	Ground	⏚
18	- Video	Ground	⏚
19	- n.c.		
20	- CVBS - in	1 V_pp / 75 ohm	⊕
21	- Shielding	Ground	⏚

1.3 Chassis Overview

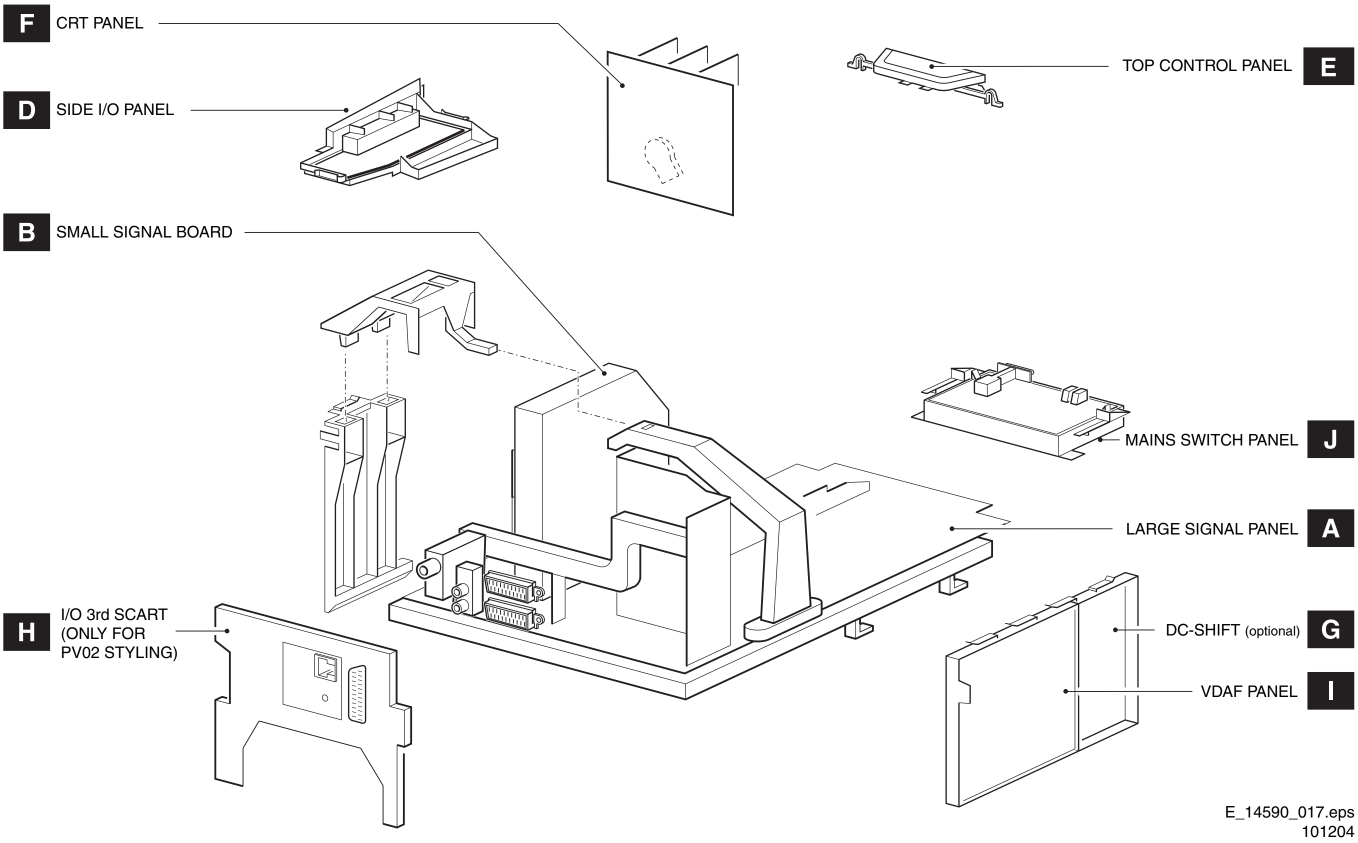

F CRT PANEL
TOP CONTROL PANEL E
D SIDE I/O PANEL
B SMALL SIGNAL BOARD
MAINS SWITCH PANEL J
LARGE SIGNAL PANEL A
H I/O 3rd SCART (ONLY FOR PV02 STYLING)
DC-SHIFT (optional) G
VDAF PANEL I
E_14590_017.eps
101204

Figure 1-6 PWB location

2. Safety Instructions, Warnings, and Notes

Index of this chapter:

2.1 Safety Instructions
2.2 Maintenance Instructions
2.3 Warnings
2.4 Notes

2.1 Safety Instructions

Safety regulations require that **during** a repair:

- Due to the chassis concept, a very large part of the circuitry (incl. deflection) is “hot”. Therefore, connect the set to the mains via an isolation transformer (> 800 VA).
- Replace safety components, indicated by the symbol ⚠, only by components identical to the original ones. Any other component substitution (other than original type) may increase risk of fire or electrical shock hazard.
- Wear safety goggles when you replace the CRT.

Safety regulations require that **after** a repair, you must return the set in its original condition. Pay, in particular, attention to the following points:

- General repair instruction: as a strict precaution, we advise you to re-solder the solder connections through which the horizontal deflection current is flowing. In particular this is valid for the:
    1. Pins of the line output transformer (LOT).
    2. Fly-back capacitor(s).
    3. S-correction capacitor(s).
    4. Line output transistor.
    5. Pins of the connector with wires to the deflection coil.
    6. Other components through which the deflection current flows.
       Note: This re-soldering is advised to prevent bad connections due to metal fatigue in solder connections, and is therefore only necessary for television sets more than two years old.
- Route the wire trees and EHT cable correctly and secure them with the mounted cable clamps.
- Check the insulation of the mains cord for external damage.
- Check the strain relief of the mains cord for proper function, to prevent the cord from touching the CRT, hot components, or heat sinks.
- Check the electrical DC resistance between the mains plug and the secondary side (only for sets that have an isolated power supply). Do this as follows:
    1. Unplug the mains cord and connect a wire between the two pins of the mains plug.
    2. Turn on the main power switch (keep the mains cord unplugged!).
    3. Measure the resistance value between the pins of the mains plug and the metal shielding of the tuner or the aerial connection of the set. The reading should be between 4.5 Mohm and 12 Mohm.
    4. Switch the TV “off” and remove the wire between the two pins of the mains plug.
- Check the cabinet for defects, to prevent the possibility of the customer touching any internal parts.

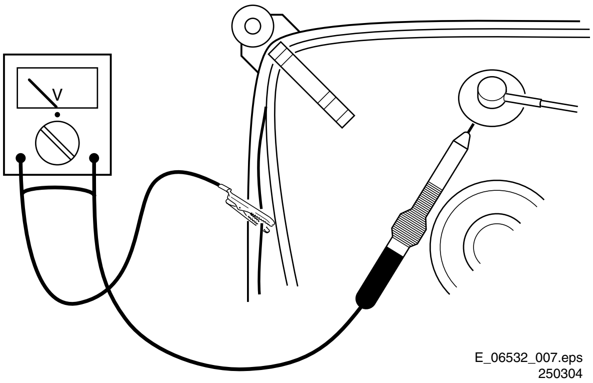
2.2 Maintenance Instructions

We recommend a maintenance inspection carried out by qualified service personnel. The interval depends on the usage conditions:

- When a customer uses the set under normal circumstances, for example in a living room, the recommended interval is three to five years.
- When a customer uses the set in an environment with higher dust, grease, or moisture levels, for example in a kitchen, the recommended interval is one year.
- The maintenance inspection includes the following actions:
    1. Perform the “general repair instruction” noted above.
    2. Clean the power supply and deflection circuitry on the chassis.
    3. Clean the picture tube panel and the neck of the picture tube.

2.3 Warnings

- In order to prevent damage to ICs and transistors, avoid all high voltage flashovers. In order to prevent damage to the picture tube, use the method shown in Fig. 2-1, to discharge the picture tube. Use a high voltage probe and a multi-meter (position V_dc). Discharge until the meter reading is 0 V (after approx. 30 s).



E_06532_007.eps
250304

Figure 2-1 Discharge picture tube

- All ICs and many other semiconductors are susceptible to electrostatic discharges (ESD, ⚠). Careless handling during repair can reduce life drastically. Make sure that, during repair, you are connected with the same potential as the mass of the set by a wristband with resistance. Keep components and tools also at this potential. Available ESD protection equipment:
    - – Complete kit ESD3 (small tablemat, wristband, connection box, extension cable and earth cable) 4822 310 10671.
    - – Wristband tester 4822 344 13999.
- Together with the deflection unit and any multi-pole unit, flat square picture tubes form an integrated unit. The deflection and the multi-pole units are set optimally at the factory. We do not recommend adjusting this unit during repair.
- Be careful during measurements in the high voltage section and on the picture tube.
- Never replace modules or other components while the unit is “on”.
- When you align the set, use plastic rather than metal tools. This will prevent any short circuits and the danger of a circuit becoming unstable.

2.4 Notes

2.4.1 General

- Measure the voltages and waveforms with regard to the chassis (= tuner) ground (⏚), or hot ground (⏚), depending on the tested area of circuitry.
- The voltages and waveforms shown in the diagrams are indicative. Measure them in the Service Default Mode (see chapter 5 “Service Modes, ...”) with a colour bar signal and stereo sound (L: 3 kHz, R: 1 kHz unless stated otherwise)

and picture carrier at 475.25 MHz for PAL, or 61.25 MHz for NTSC (channel 3).

- Where necessary, measure the waveforms and voltages with (┐┌) and without (╳) aerial signal. Measure the voltages in the power supply section both in normal operation (⦶) and in standby (⏻). These values are indicated by means of the appropriate symbols.
- The picture tube panel has printed spark gaps. Each spark gap is connected between an electrode of the picture tube and the Aquadag coating.
- The semiconductors indicated in the circuit diagram and in the parts lists, are interchangeable per position with the semiconductors in the unit, irrespective of the type indication on these semiconductors.
- Manufactured under license from Dolby Laboratories. “Dolby”, “Pro Logic” and the “double-D symbol”, are trademarks of Dolby Laboratories.

2.4.2 Schematic Notes

- All resistor values are in ohms and the value multiplier is often used to indicate the decimal point location (e.g. 2K2 indicates 2.2 kohm).
- Resistor values with no multiplier may be indicated with either an "E" or an "R" (e.g. 220E or 220R indicates 220 ohm).
- All capacitor values are expressed in micro-farads (μ= x 10^-6), nano-farads (n= x 10^-9), or pico-farads (p= x 10^-12).
- Capacitor values may also use the value multiplier as the decimal point indication (e.g. 2p2 indicates 2.2 pF).
- An "asterisk" (*) indicates component usage varies. Refer to the diversity tables for the correct values.
- The correct component values are listed in the Electrical Replacement Parts List. Therefore, always check this list when there is any doubt.

2.4.3 Lead Free Solder

Philips CE is going to produce lead-free sets (PBF) from 1.1.2005 onwards.
Lead-free sets will be indicated by the PHILIPS-lead-free logo on the Printed Wiring Boards (PWB):

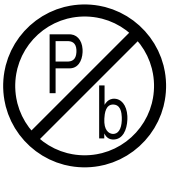


Figure 2-2 Lead-free logo

This sign normally has a diameter of 6 mm, but if there is less space on a board also 3 mm is possible.

In case of doubt wether the board is lead-free or not (or with mixed technologies), you can use the following method:

- Always use the highest temperature to solder, when using SAC305 (see also instructions below).
- De-solder thoroughly (clean solder joints to avoid mix of two alloys).

Caution: For BGA-ICs, you **must** use the correct temperature-profile, which is coupled to the 12NC. For an overview of these profiles, visit the website *www.atyourservice.ce.philips.com* (needs subscription, but is not available for all regions)
You will find this and more technical information within the "Magazine", chapter "Workshop information".
For additional questions please contact your local repair-helpdesk.

Due to lead-free technology some rules have to be respected by the workshop during a repair:

- Use only lead-free soldering tin Philips SAC305 with order code 0622 149 00106. If lead-free solder paste is required, please contact the manufacturer of your soldering equipment. In general, use of solder paste within workshops should be avoided because paste is not easy to store and to handle.
- Use only adequate solder tools applicable for lead-free soldering tin. The solder tool must be able
  - To reach at least a solder-tip temperature of 400°C.
  - To stabilise the adjusted temperature at the solder-tip.
  - To exchange solder-tips for different applications.
- Adjust your solder tool so that a temperature around 360°C - 380°C is reached and stabilised at the solder joint. Heating time of the solder-joint should not exceed ~ 4 sec. Avoid temperatures above 400°C, otherwise wear-out of tips will rise drastically and flux-fluid will be destroyed. To avoid wear-out of tips, switch “off” unused equipment or reduce heat.
- Mix of lead-free soldering tin/parts with leaded soldering tin/parts is possible but PHILIPS recommends strongly to avoid mixed regimes. If not to avoid, clean carefully the solder-joint from old tin and re-solder with new tin.
- Use only original spare-parts listed in the Service-Manuals. Not listed standard material (commodities) has to be purchased at external companies.
- Special information for lead-free BGA ICs: these ICs will be delivered in so-called "dry-packaging" to protect the IC against moisture. This packaging may only be opened short before it is used (soldered). Otherwise the body of the IC gets "wet" inside and during the heating time the structure of the IC will be destroyed due to high (steam-)pressure inside the body. If the packaging was opened before usage, the IC has to be heated up for some hours (around 90°C) for drying (think of ESD-protection !).
  Do not re-use BGAs at all!
- For sets produced before 1.1.2005, containing leaded soldering tin and components, all needed spare parts will be available till the end of the service period. For the repair of such sets nothing changes.

2.4.4 Practical Service Precautions

- **It makes sense to avoid exposure to electrical shock.** While some sources are expected to have a possible dangerous impact, others of quite high potential are of limited current and are sometimes held in less regard.
- **Always respect voltages**. While some may not be dangerous in themselves, they can cause unexpected reactions that are best avoided. Before reaching into a powered TV set, it is best to test the high voltage insulation. It is easy to do, and is a good service precaution.

3. Directions for Use

You can download this information from the following website:
http://www.philips.com/support

4. Mechanical Instructions

Index of this chapter:

4.1 Service Connector (for ComPair)
4.2 Set Disassembly
4.3 Service Positions
4.4 Assies/Panels Removal
4.5 Set Re-assembly

Note: figures below can deviate slightly from the actual situation, due to the different set executions.

4.1 Service Connector (for ComPair)

For service diagnostics with ComPair, it is not necessary to disassemble the set. You only have to connect the ComPair interface box via the appropriate cable, to the service connector on the rear of the set (see figure "Rear connections" in chapter "Technical specifications, ..."), and start the program (see also chapter "Service Modes .... ").

4.2 Set Disassembly

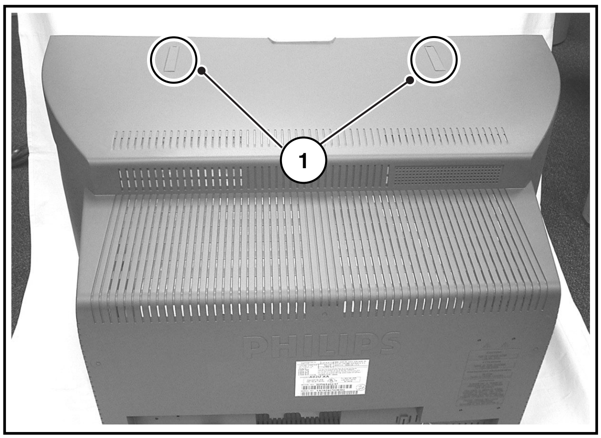
Follow the disassemble instructions in described order.

4.2.1 Rear Cover Removal

Warning: disconnect the mains power cord before you remove the rear cover.

For PV02 styling (for 9319 sets)

1. Manually unlock and remove the two plastic cover cups (1) (if present) on the top of TV.
2. Remove all the fixation screws of the rear cover.
3. Remove the rear cover.

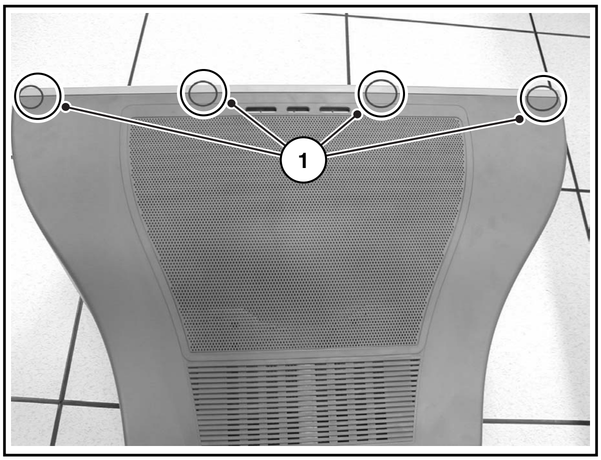


E_13950_010.eps
030304

Figure 4-1 Rear cover (PV02 styling)

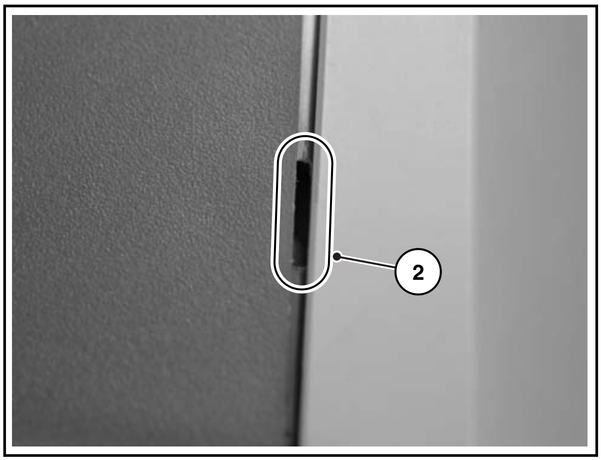
For FL13B styling (for 9309 and 9009 sets)

1. Remove all screws. If you do not remove them, you cannot access the clips.
2. Tilt the set a little forward, so that you can release the two clickfit clamps that are located at the bottomplate of the set.
3. Four openings (1) can be found at the top. The openings are very small (2).
   Note: Some sets only have the two inner openings.
4. Underneath every opening there is a clip. Push this clip down with a very thin piece of metal (3), until you hear a click.
   Caution: do **not** use a screwdriver, this will damage the cabinet.
5. When all four clips are pushed down, the back cover can be removed.



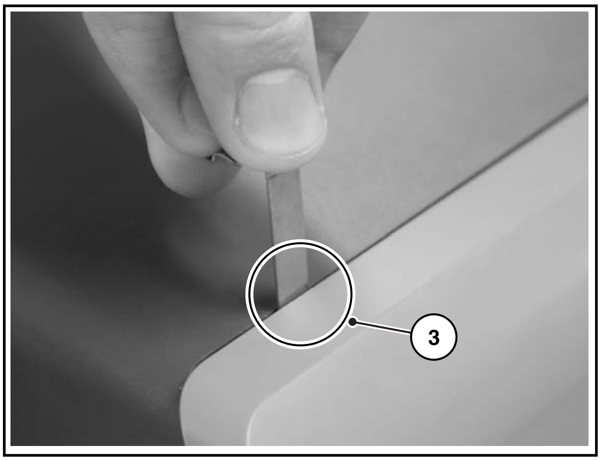
E_13950_011 .eps
050404

Figure 4-2 Rear cover (FL13B styling)



E_13950_012 .eps
050404

Figure 4-3 Opening



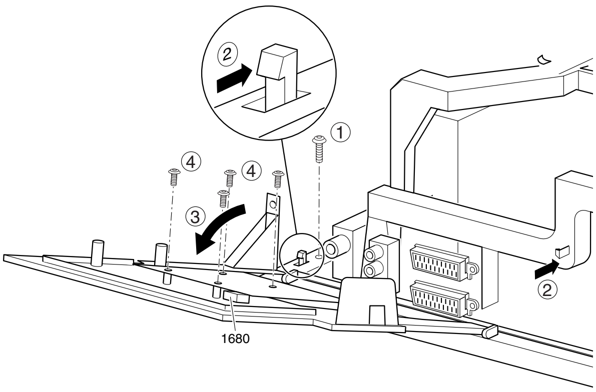
E_13950_013.eps
050404

Figure 4-4 Pushing clips down

4.3 Service Positions

This chassis has several predefined service positions, for better accessibility. They are explained below in more detail.

4.3.1 Solder Side 'I/O 3rd SCART' panel (for PV02 styling - 9319 sets)



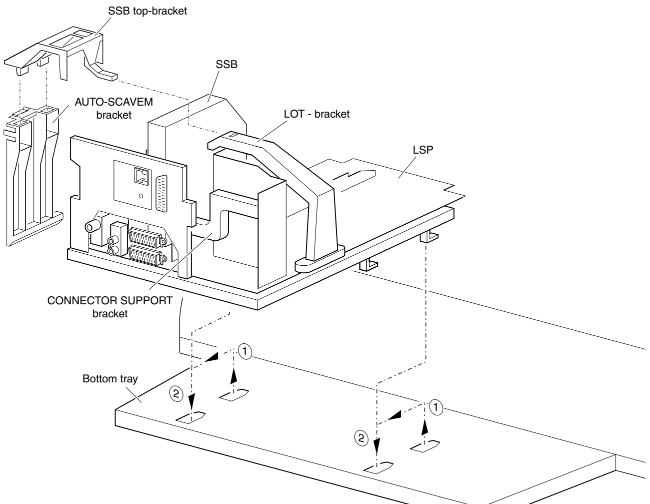
E_14950_018.eps
240304

Figure 4-5 Service position 1

To remove or access the 'I/O 3rd SCART' panel, do the following:

1. Remove the fixation screw (1) (if present).
2. Release the two pegs (2).
3. At the same time, pull the complete module away from the LSP bracket (3). It hinges in the LSP bracket.
4. To remove the panel, disconnect the flat-cables, and remove the four panel screws (4).

4.3.2 Component Side LSP



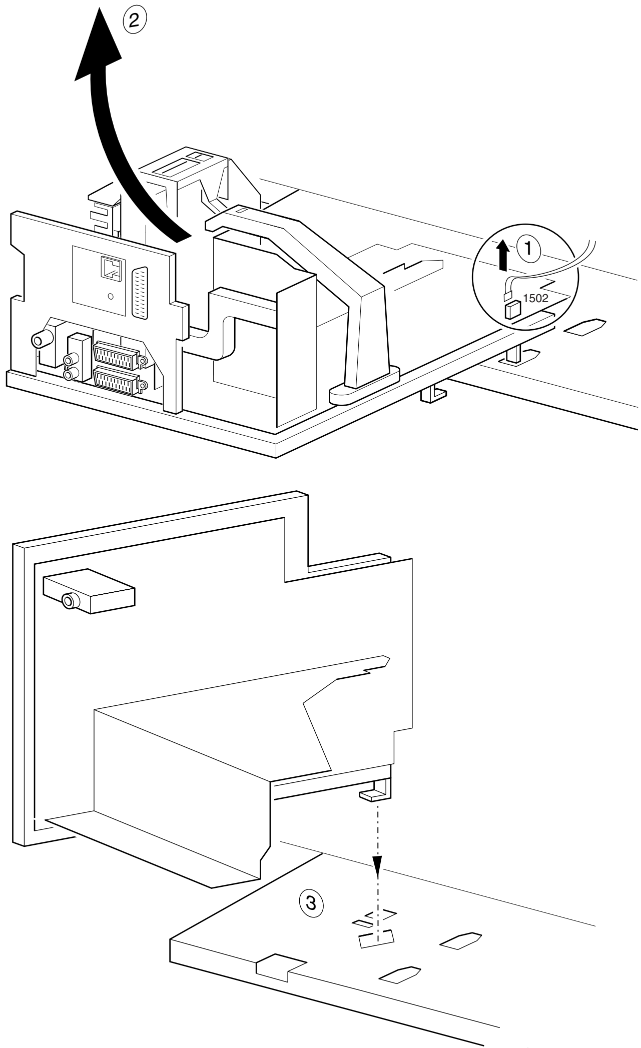
CL 26532041_065.eps
110402

Figure 4-6 Service position 2

For better accessibility of the LSP, do the following (see figure above):

1. Remove the LSP-bracket from the bottom tray by pulling it backwards.
2. Hook the bracket in the first row of fixation holes of the bottom tray. In other words, reposition the bracket from (1) to (2).

4.3.3 Solder Side LSP



CL 26532041_066.eps
110402

Figure 4-7 Service position 3

To get access to the bottom side (solder side) of the LSP, do the following (see figure above):

1. Remove the DAF-module (see paragraph 'DAF Assy/ Panel' below).
2. To disconnect the degaussing coil from the LSP, remove the cable from connector 1502 (1).
3. Release the wiring from their fixation clamps, in order to get room for repositioning the LSP.
4. Flip the LSP 90 degrees clockwise (2), and place it in the fixation hole at the left side of the bottom tray (3).

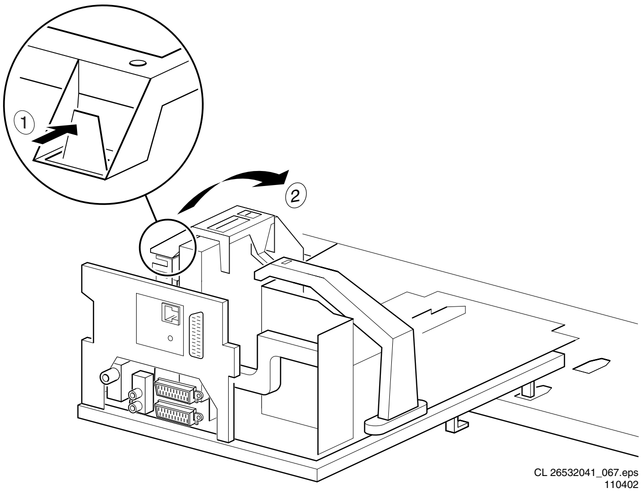
4.3.4 Small Signal Board (SSB)

Caution:
Always switch the set completely “OFF” (disconnected the mains cord) before you remove or replace the SSB.
As the 5V2 standby voltage is always present (while the set is switched “ON”, in “standby” or in “Protection” mode) on the SIMM connector, it is very risky to remove the SSB in this situation, because the risk of short circuiting is very great.

In fact, there is no predefined service position for the SSB. Most test points are located on the A-side (side that is facing the tuner). If you have to replace ICs, you must take the complete SSB module out of the SIMM-connector.
Note: For good access to the A-side, it is necessary to remove the Auto-SCAVEM bracket (at the left side of the SSB). Remove the two fixation screws at the bottom by the Auto-

SCAVEM bracket. Lift the Auto-SCAVEM bracket slightly up, and at the same time bend the top a little away from the tuner. Now, push the bracket into the direction of the CRT, and lift it out of the LSP-bracket.

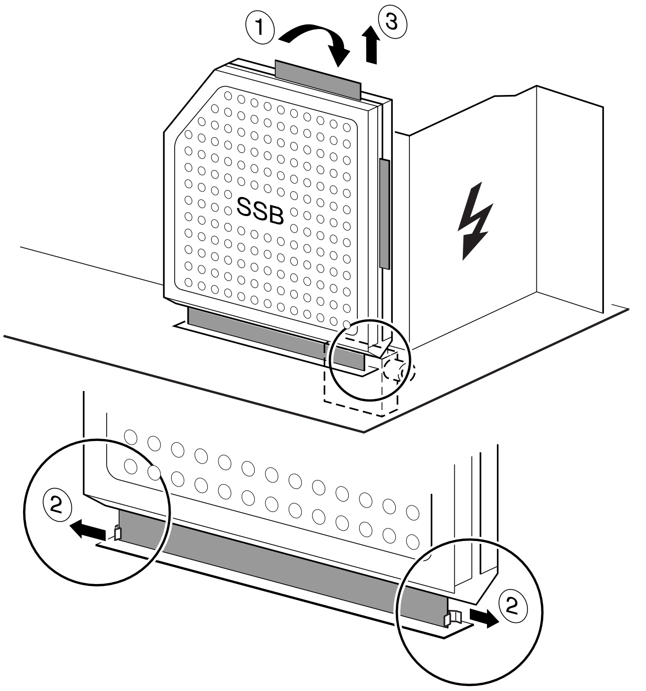
To get access to the SSB test points, do the following:



CL 26532041_067.eps
110402

Figure 4-8 SSB removal (part 1)

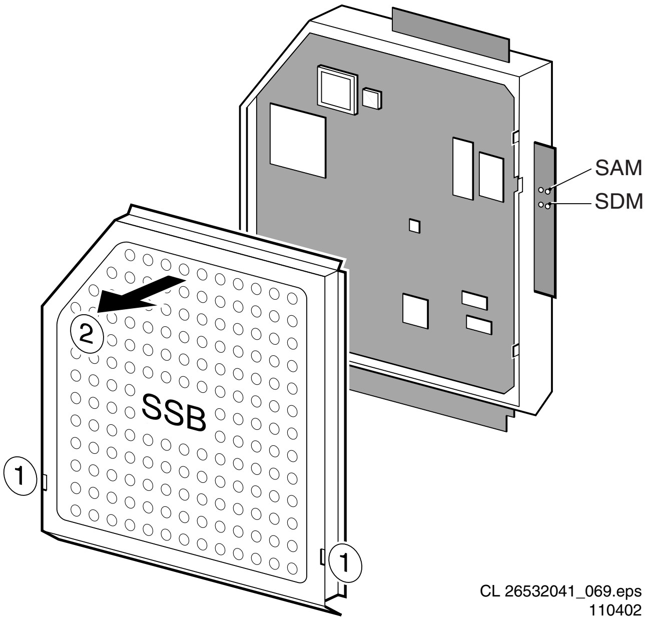
1. Put the LSP in service position 2 (as described above).
2. Release the two clamps at the top of the SSB bracket (1) and pull the bracket upward (2) (it hinges in the bracket at the LOT side).
3. Now you can remove the complete SSB bracket.



CL 26532041_068.eps
110402

Figure 4-9 SSB removal (part 2)

1. Push the top of the SSB towards the LOT (1).
2. Due to the pressure, the two metal clamps at both sides of the SIMM-connector will release (2).
3. Take the complete SSB out (3).



CL 26532041_069.eps
110402

Figure 4-10 SSB removal (part 3)

1. Once you have taken out the SSB, remove the shieldings (2). Sometimes it is necessary to unsolder some solder-tags first (1).
2. Now re-place the SSB module in the SIMM-connector in reverse order.

Notes:

- For better access to the SSB, it is possible to order an “extension tool” under number **9965 000 14526**.
- If necessary for the measurement, you can put the LSP in “Service position 2” (as described above).

4.4 Assies/Panels Removal

Sometimes, it can be necessary to swap a complete assy or Printed Wiring Board (PWB). How that can be done is explained below.

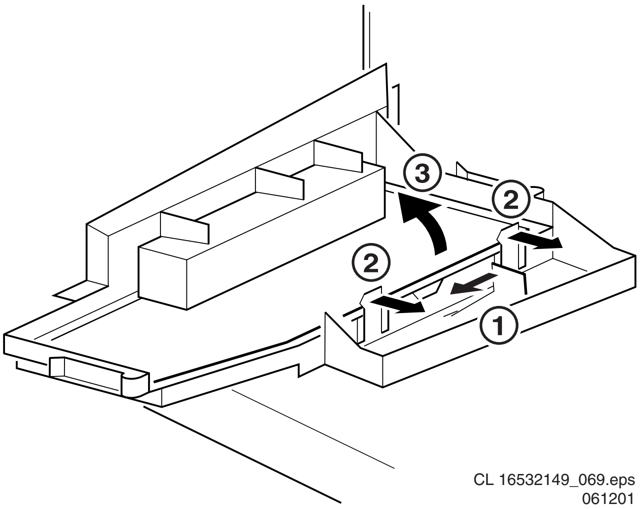
4.4.1 Top Control Assy/Panel

Notes:

- PV02 styling: assy is mounted in the front cabinet;
- FL13B styling: assy is mounted in the rear cover.

1. Remove the two fixation screws.
2. Push the assy a little bit upwards, and then pull it backwards to release it from the front hinge.
3. Lift the panel from its bracket, while releasing the four fixation clamps.

4.4.2 Side-I/O Assy/Panel

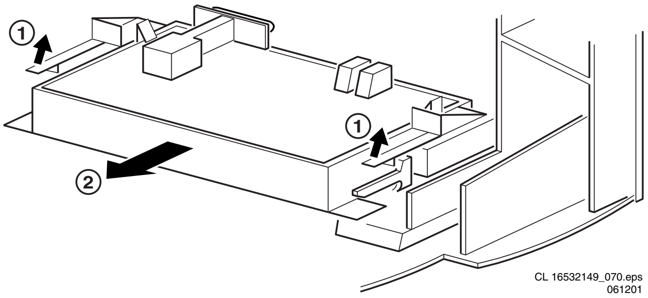


CL 16532149_069.eps
061201

Figure 4-11 Side I/O assy/panel

1. Release the snap-hook (1) with your finger.
2. At the same time, pull the assy backwards (2).
3. Release the two fixation clamps on the right side of the bracket (the panel hinges at the left side).
4. Remove the panel from the bracket (3).

4.4.3 Mains Switch Assy/Panel

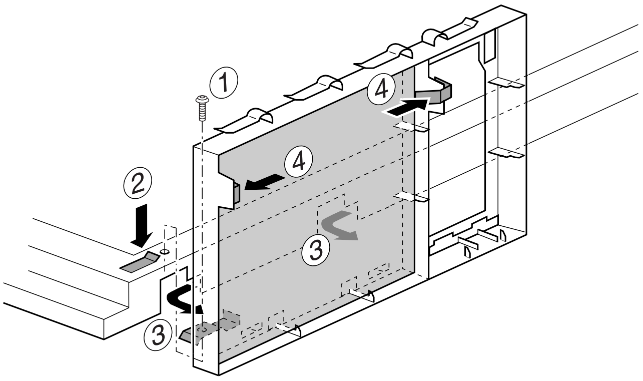


CL 16532149_070.eps
061201

Figure 4-12 Mains switch assy/panel

1. Release the two fixation clamps (rather difficult to reach), by pushing them upwards (1). At the same time, pull the complete assy backwards (2).
   Note: be aware that the degaussing coil can hamper this.
2. Release the two fixation clamps on the two sides of the bracket (the panel hinges at the connector side).
3. Remove the panel from the bracket.
4. When the light guide (sitting in the cabinet, in front of the LEDs) is defective, you can replace it by pushing it forwards at the left side (it hinges at the right side, seen from the rear).

4.4.4 DAF Assy/Panel



CL 16532044_011.eps
150501

Figure 4-13 DAF-module

1. Remove the fixation screw (1) (if present).
2. Push down the fixation clamp (2), and pull the complete bracket at the same time away from the CRT (3). The module is now free from the LSP-bracket.
3. Release the fixation clamps (4), in order to remove the panel from its bracket.

4.4.5 Small Signal Board (SSB)

See paragraph “Small Signal Board (SSB)” above.

4.4.6 Large Signal Panel (LSP)

1. Remove the “I/O 3rd SCART” assy (for PV02 styling) (see paragraph “I/O 3rd SCART” above).
2. Remove the DAF assy (see paragraph “DAF Assy/Panel” above).
3. Remove the SSB bracket and the SSB (see paragraph “Small Signal Board (SSB)’”above).
4. Remove the two fixation screws at the bottom by the Auto-SCAVEM bracket. Lift the Auto-SCAVEM bracket slightly up, and at the same time bend the top a little away from the tuner. Now, push the bracket into the direction of the CRT, and lift it out of the LSP-bracket.
5. Remove the two fixation screws at the bottom by the LOT bracket. Lift the LOT bracket from the right side slightly up, and at the same time release it from the fastening at the top, and remove the LOT bracket.
6. Disconnect the necessary cables.
7. Remove the two fixation screws. One screw is located nearby the SIMM-connector and the second screw is located nearby the degaussing coil.
8. Release the fixation clamps on the left side and on the topside of the LSP-bracket (the panel hinges at the right side).
9. Remove the panel from the bracket.

4.5 Set Re-assembly

To re-assemble the whole set, do all processes in reverse order.

Note: be sure that, before the rear cover is mounted:
- The mains cord is mounted correctly in its guiding brackets.
- All wires/cables are returned in their original positions. This is very important due to the large “hot” area of the set

5. Service Modes, Error Codes, and Fault Finding

Index of this chapter:

5.1 Test Points
5.2 Service Modes
5.3 Problems and Solving Tips (related to CSM)
5.4 ComPair
5.5 Error Codes
5.6 The Blinking LED Procedure
5.7 Protections
5.8 Repair tips

5.1 Test Points

The chassis is equipped with test points printed on the circuit board assemblies. They refer to the diagram letters.

Perform measurements under the following conditions:

- Service Default Mode.
- Video: colour bar signal.
- Audio: 3 kHz left, 1 kHz right.

5.2 Service Modes

Service Default Mode (SDM) and Service Alignment Mode (SAM) offer several features for the service technician, while the Customer Service Mode (CSM) is used for communication between a Philips Customer Care Centre (P3C) and a customer.

There is also the option of using ComPair, a hardware interface between a computer (see requirements below) and the TV chassis. It offers the ability of structured troubleshooting, test pattern generation, error code reading, software version readout, and software upgrading.
Minimum requirements: a Pentium processor, Windows 95/98, and a CD-ROM drive (see also paragraph "ComPair").

Note: In this chassis, two LED configurations are possible: with bicoloured LED (red/green) or with separate blue and red LEDs. The bicoloured version is the one we know from EM5E. The version with blue LED works slightly different. The blue LED is controlled by software (via ON_OFF_LED). The red LED will light in anti-phase to the blue one, but with a time delay. This means that if the blue LED is blinking fast, the red LED will stay off. But after the blue LED is "OFF" long enough, the red LED will go "ON".
So take care: In certain service modes (e.g. blinking LED, stepwise start-up, etc.) you must observe the blue LED and ignore the red LED.

5.2.1 Service Default Mode (SDM)

Purpose

- To create a pre-defined setting, to get the same measurement results as given in this manual.
- To override SW protections.
- To start the blinking LED procedure.

Specifications

- Tuning frequency: 475.25 MHz for PAL/SECAM.
- Colour system: SECAM L for France or PAL B/G for the rest of Europe.
- All picture settings at 50 % (brightness, colour, contrast).
- All sound settings at 50 %, except volume at 25 %.
- All service-unfriendly modes (if present) are disabled, like:
  - (Sleep) timer.
  - Child/parental lock.
  - Blue mute.
  - Automatic volume limiter (AVL).
  - Auto switch-off (when no video signal was received for 10 minutes).
  - Skip/blank of non-favourite pre-sets.
  - Smart modes.
  - Auto store of personal presets.
  - Auto user menu time-out.

How to enter SDM

- Use one of the following methods:
- Use the standard RC-transmitter and key in the code **"062596"**, directly followed by the "MENU" button.
  Note: It is possible that, together with the SDM, the main menu will appear. To switch it off, push the "MENU" button again.
- When you shorten for a moment the two solder pads on the 'external part' of the SSB print, with the indication "SDM". Activation can be performed in all modes, except when the set has a problem with the main-processor.
  Caution: If the SDM is entered via the pins, all the software-controlled protections are de-activated.
- Use the DST-emulation feature of ComPair.
- Use the "DEFAULT" button on the Dealer Service Tool (RC7150).

After entering this mode, "SDM" will appear in the upper right corner of the screen.

How to navigate
When you press the "MENU" button on the RC transmitter, the set will toggle between the SDM and the normal user menu (with the SDM mode still active in the background).

How to exit SDM
Use one of the following methods:

- Switch the set to STANDBY via the RC-transmitter.
- Press the "EXIT" button on the DST.
- Via a standard customer RC-transmitter: key in **"00"**-sequence.

5.2.2 Service Alignment Mode (SAM)

Purpose

- To perform (software) alignments.
- To change option settings.
- To easily identify the used software version.
- To view operation hours.
- To display (or clear) the error code buffer.

Specifications

- Operation hours counter.
- Software version.
- Option settings.
- Error buffer reading and erasing.
- Software alignments.

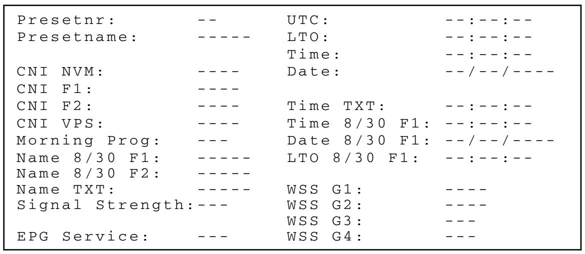
How to enter SAM
Use one of the following methods:

- Via a standard RC transmitter: key in the code **"062596"** directly followed by the "OSD [i+]" button. After activating SAM with this method a service warning will appear on the screen, you can continue by pressing any digit key on the RC.
- Short for a moment the two solder pads on the 'external part' of the SSB print, with the indication SAM. Depending on the software version it is possible that the service warning will appear, you can continue by pressing any digit key on the RC.
- Use the DST-emulation feature of ComPair.
- Press the ALIGN button on the DST while the set is in the normal operation

After entering this mode, "SAM" will appear in the upper right corner of the screen.

Contents of SAM:

- **OPERATION HOURS.** Displays the accumulated total of operation hours (not the standby hours).
- **HARDWARE INFO**
  - **ROM VERSION.** Displays the date of the software and the software version of the ROM (**Example:** EM53EU1-1.0_01234 = AAABBC-X.Y_NNNNN).
    - **AAA**= the chassis name.
    - **BB**= the region: EU= Europe, AP= Asia Pacific PAL/Multi, AN= Asia Pacific NTSC, US= USA, LT= LATAM.
    - **C**= the language cluster number.
    - **X.Y**= the software version, where X is the main version number (different numbers are not compatible with one another) and Y is the sub version number (a higher number is always compatible with a lower number).
    - **NNNNN**= last five digits of 12nc code software.
  - **FBX VERSION.** The 12NC-number of the build in Feature Box software.
- **ERRORS** (followed by maximal 10 errors). The most recent error is displayed at the upper left (for an error explanation see paragraph "Error Codes").
- **DEFECTIVE MODULE.** Here the module that generates the error is displayed. If there are multiple errors in the buffer, which are not all generated by a single module, there is probably another defect. It will then display the message "UNKNOWN" here.
- **RESET ERROR BUFFER.** When you press the "OK" button, the error buffer is reset.
- **ALIGNMENTS.** This will activate the "ALIGNMENTS" sub-menu.
- **DEALER OPTIONS.** Extra features for the dealers.
- **SERVICE OPTIONS.** Extra features for Service.
- **INITIALISE NVM.** When an NVM was corrupted (or replaced) in the former EM3 chassis, the microprocessor replaces the content with default data (to assure that the set can operate). However, all pre-sets and alignment values are gone now, and option numbers are not correct. Therefore, this was a very drastic way. In this chassis, the procedure is implemented in another way: The moment the processor recognises a corrupted NVM, the "INITIALISE NVM" line will be highlighted. Now, you can do two things (dependent of the service instructions at that moment):
  - Save the content of the NVM via ComPair for development analysis, before initialising. This will give the Philips Service department an extra possibility for diagnosis (e.g. when Development asks for this).
  - Initialise the NVM (same as in the past, however now it happens conscious).
- **STORE.** All options and alignments are stored when pressing the "OK"-button
- **FUNCTIONAL TEST.** All devices are tested via the "OK" button. Eventual errors are displayed in the error buffer. The error buffer is not erased, the content returns when this test is terminated.
- **DAILY MENUS.** With the "OK" button, you can go to the normal user menu. SAM is still active in the background. With the "MENU" button, you return from the user menu to SAM menu. This feature can be helpful to quickly change some settings in the user menu.
- **SW MAINTENANCE**
  - **UPGRADE.** Not applicable for this chassis
  - **EVENTS.** Not useful for service purposes. In case of specific software problems, the development department can ask for this info.
  - **BDM INFO.** Broadcast Debug Menu info. The purpose of this menu is to debug the broadcast, NOT the TV. The menu gives an overview of what is received on the current preset. Following items are displayed:



```
Presetnr:       --      UTC:          --:--:--
Presetname:     -----   LTO:          --:--:--
                        Time:         --:--:--
CNI NVM:        ----    Date:         --/--/----
CNI F1:         ----
CNI F2:         ----    Time TXT:     --:--:--
CNI VPS:        ----    Time 8/30 F1: --:--:--
Morning Prog:   ---     Date 8/30 F1: --/--/----
Name 8/30 F1:   -----   LTO 8/30 F1:  --:--:--
Name 8/30 F2:   -----
Name TXT:       -----   WSS G1:       ----
Signal Strength:---     WSS G2:       ----
                        WSS G3:       ---
EPG Service:    ---     WSS G4:       ---
```

CL 36532017_055.eps
240403

Figure 5-1 Broadcast debug menu overview.

Table 5-1 Broadcast debug menu explanation

Item	Source	Description
Presetnr	Set	Presetnumber of the current selected preset.
Presetname	Set	Presetname of the current selected preset.
CNI NVM	Broadcaster	CNI number stored in NVM for the current preset.
CNI F1	Broadcaster	CNI number from transmitted Packet 8/30 Format 1.
CNI F2	Broadcaster	CNI number from transmitted Packet 8/30 Format 2.
CNI VPS	Broadcaster	CNI number from transmitted VPS line.
Morning Prog	Broadcaster	"ARD" or "ZDF" according to dedicated bit in 8/30 Format 1.
Name 8/30 F1	Broadcaster	Name extracted from status message of 8/30 Format 1.
Name 8/30 F2	Broadcaster	Name extracted from status message of 8/30 Format 2.
Name TXT	Broadcaster	Name extracted from TXT header.
Signal Strength	FBX	Noise figure measured for selected preset.
EPG Service	Set	EPG Service stored in NVM for current preset displayed as "TXT", "MCP", "SCP", "OCP".
UTC	Set	UTC (Universal Time Code formerly known as Greenwich Mean Time) used in the set.
LTO	Set	LTO (Local Time Offset) used in the set. Used by EPG for all Nextview displays. (= Time TXT header - Time 8/30 F1)
Time	Set	Current time running in the set. Was extracted at startup, then maintained by software.
Date	Set	Current date running in the set. Was extracted at startup, then maintained by software.
Time TXT	Broadcaster	TXT header time from the selected preset.
Time 8/30 F1	Broadcaster	UTC time from 8/30 Format 1.
Date 8/30 F1	Broadcaster	Date from 8/30 Format 1.
LTO 8/30 F1	Broadcaster	LTO from 8/30 Format 1.
WSS G1	Broadcaster	WSS Group 1 (Aspect Ratio) bits 0 1 2 3
WSS G2	Broadcaster	WSS Group 2 (Enhanced Services) bits 4 5 6 7
WSS G3	Broadcaster	WSS Group 3 (Subtitles) bits 8 9 10
WSS G4	Broadcaster	WSS Group 4 (Reserved) bits 11 12 13

How to navigate

- In SAM, you can select the menu items with the "CURSOR UP/DOWN" key on the RC-transmitter. The selected item will be highlighted. When not all menu items fit on the screen, move the "CURSOR UP/DOWN" key to display the next/previous menu items.
- With the "CURSOR LEFT/RIGHT" keys, it is possible to:
  - (De) activate the selected menu item.
  - Change the value of the selected menu item.
  - Activate the selected submenu.

How to exit SAM

Use one of the following methods:

- Press the "MENU" button on the RC-transmitter, or
- Switch the set to STANDBY via the RC-transmitter, or
- Press the "EXIT" button on the DST.

5.2.3 Customer Service Mode (CSM)

Purpose

When a customer is having problems with his TV-set, he can call his dealer. The service technician can than ask the customer to activate the CSM, in order to identify the status of the set. Now, the service technician can judge the severity of the complaint. In many cases, he can advise the customer how to solve the problem, or he can decide if it is necessary to visit the customer.
The CSM is a read only mode; therefore, modifications in this mode are not possible.

How to enter CSM

Use one of the following methods:

- Press the "MUTE" button on the RC-transmitter simultaneously with the "MENU" button on the TV (top control) for at least 4 seconds.
- Key in the code "123654" via the standard RC transmitter.

Note: Activation of the CSM is only possible if there is no (user) menu on the screen!

How to navigate

By means of the "CURSOR-DOWN/UP" knob on the RC-transmitter, you can navigate through the five menus.

Contents of CSM

Customer Service Menu 1

- **SOFTWARE VERSION (Example: EM53EU1-1.0_01234).** Displays the build in software version. In case of field problems related to software, software flash-RAM pos.7006 must be changed by a new one. Do this via soldering. You will find details of the software versions in the chapter "Software Survey" of the "Product Survey - Colour Television" publication. This publication is generated four times a year.
- **FEATURE BOX.** The 12NC-number of the build in Feature Box software
- **SET TYPE.** This information is very helpful for a helpdesk/ workshop as reference for further diagnosis. In this way, it is not necessary for the customer to look at the rear of the TV-set.
- **CODE 1.** Gives the latest 5 errors of the error buffer. As soon as the built-in diagnose software has detected an error the buffer is adapted. The last occurred error is displayed on the leftmost position. Each error code is displayed as a 3-digit number. When less than 10 errors occur, the rest of the buffer is empty (000). See also paragraph "Error Codes" for a description.
- **CODE 2.** Gives the first 5 errors of the error buffer. See also paragraph Error Codes for a description.
- **VOLUME.** Gives the last status of the volume as set by the customer. The value can vary from 0 (volume is minimum) to 100 (volume is maximum). Volume values can be changed via the volume key on the RC-transmitter.
- **BRIGHTNESS.** Gives the last status of the brightness as set by the customer. The value can vary from 0 (brightness is minimum) to 100 (brightness is maximum). Brightness values can be changed via the "CURSOR LEFT" and "CURSOR RIGHT" keys on the RC-transmitter after pressing the "MENU" button and selecting "PICTURE" and "BRIGHTNESS".
- **CONTRAST.** Gives the last status of the contrast as set by the customer. The value can vary from 0 (contrast is minimum) to 100 (contrast is maximum). Contrast values can be changed via "CURSOR LEFT" and "CURSOR RIGHT" keys on the RC-transmitter after pressing the "MENU" button and selecting "PICTURE" and "CONTRAST".
- **COLOUR.** Gives the last status of the colour saturation, as set by the customer. The value can vary from 0 (colour is minimum) to 100 (colour is maximum). Colour values can be changed via "CURSOR LEFT" and "CURSOR RIGHT" keys on the RC-transmitter after pressing the "MENU" button and selecting "PICTURE" and "COLOUR".
- **HUE.** Only relevant for NTSC-signals (e.g. some NTSC-DVD-discs).

Customer Service Menu 2

- **SHARPNESS.** Gives the sharpness value. The value can vary from 0 (sharpness is minimum) to 7 (sharpness is maximum). In case of bad antenna signals, a too high value of the sharpness can result in a noisy picture. Sharpness values can be changed via the "CURSOR LEFT" and "CURSOR RIGHT" keys on the RC-transmitter after pressing the "MENU" button and selecting "PICTURE" and "SHARPNESS".
- **HEADPHONE VOLUME.** Gives the last status of the headphone volume, as set by the customer. The value can vary from 0 (volume is minimum) to 100 (volume is maximum). Headphone volume values can be changed via the "CURSOR LEFT" and "CURSOR RIGHT" keys on the RC-transmitter after pressing the "MENU" button and selecting "SOUND" and "HEADPHONE VOLUME".
- **SURROUND MODE.** Indicates the by the customer selected surround mode (or automatically chosen mode). In case the set is a Non-Dolby set, there will be displayed **"0"**. If it is a Dolby-set then is displayed: "STEREO", "3 STEREO", "HALL", "3DSURROUND", "DOLBY PRO LOGIC" or "DOLBY DIGITAL". These settings can be influenced after pressing the "MENU" button and selecting "SOUND" and SURROUND MODE". It can also have been selected automatically by signalling bits (internal software).
- **TUNER FREQUENCY.** Indicates the frequency the selected transmitter is tuned to. The tuner frequency can be changed via the "CURSOR LEFT" and "CURSOR RIGHT" keys for fine tune after opening the installation menu and selecting "INSTALL" and "MANUAL INSTALL".
- **DIGITAL OPTION.** Gives the selected digital mode, "100 HZ", "DIGITAL SCAN", "NATURAL MOTION", "DOUBLE LINES", or "PIXEL PLUS". Change via "MENU", "PICTURE", "DIGITAL OPTIONS".
- **CENTRE TRIM.** Indicates the difference between main volume and volume of centre speaker. Change via: "MENU", "SETUP", "SPEAKERS", and "CENTRE VOLUME" (not available when "Surround Mode" is set to "STEREO" or "HALL"). The value can vary from "-10" to "+10"
- **TV SYSTEM.** Gives information about the video system of the selected transmitter.
  - **BG:** PAL BG signal received.
  - **DK:** PAL DK signal received.
  - **I:** PAL I signal received.
  - **L/La:** SECAM L/La signals received.
  - **M:** NTSC M signal received with video carrier on 38.9 MHz.

Customer Service Menu 3

- **BALANCE.** Indicates the balance settings, between "-50" and "+50". Change via "MENU", "SOUND", and "BALANCE". Not applicable for Dolby Pro Logic sets.
- **CENTRE MODE.** Indicates if centre mode is set "ON" or "OFF". When centre mode is on, all TV speakers are used as one centre speaker. Change Centre mode via "MENU", "SETUP", "SPEAKERS", and "CENTRE MODE".
- **DNR.** Gives the selected DNR setting (Dynamic Noise Reduction), "OFF", "MINIMUM", "MEDIUM", or "MAXIMUM". Change via "MENU", "PICTURE", "DNR"
- **NOISE FIGURE.** Gives the noise ratio for the selected transmitter. This value can vary from 0 (good signal) to 127

(average signal) and to 255 (bad signal). For some software versions, the noise figure will only be valid when "Active Control" is set to "medium" or "maximum".

- **SOURCE.** Indicates which source is used and the video/ audio signal quality of the selected source. (**Example:** Tuner, Video/NICAM) Source: "TUNER", "EXT1", "EXT2", "EXT3", "EXT4", "SIDE", "AV1", "AV2", "AV3" or "AV4". Video signal quality: "VIDEO", "S-VIDEO", "RGB 1FH", "YPBPR 1FH 480P", "YPBPR 1FH 576P", "YPBPR 1FH 1080I", "YPBPR 2FH 480P", "YPBPR 2FH 576P", "YPBPR 2FH 1080I", "RGB 2FH 480P", "RGB 2FH 576P" or "RGB 2FH 1080I". Audio signal quality: "STEREO", "SPDIF 1", "SPDIF 2" or "SPDIF".
- **AUDIO SYSTEM.** Gives information about the audio system of the selected transmitter: "ANALOGUE MONO", "ANALOGUE STEREO", "PCM 2/0", "DD 1/0", "DD 2/0 LtRt", "DD 2/0 L0R0", "DD 2/1", "DD 2/2", "DD 3/0", "DD 3/1", "DD 3/2", "DD 1+1", "MPEG 1/0", "MPEG 2/0", "MPEG 2/0 LtRt", "MPEG 2/1", "MPEG 2/2", "MPEG 3/0", "MPEG 3/1", "MPEG 3/2", "MPEG 1+1" or "MPEG 2+2".
- **TUNED BIT.** Gives information about the tuning method of the stored pre-set. If a channel is found via "automatic installation", you will see the value "Off". When you change this (automatically found) frequency via "fine tune" adjustment (installation menu - manual installation), the displayed value will change to "On". Therefore, when you see the value "On" in this line, it is an indication that the received channel is a non-standard signal (e.g. of a VCR).
- **SURROUND SPEAKERS.** Indicates if the surround speakers are present, "YES" or "NO". Change via "MENU", "SETUP", "SPEAKERS", and "SURROUND SPEAKERS".
- **ON TIMER.** Indicates if the "On Timer" is set "ON" or "OFF" and if the timer is "ON" also displays start time, start day and program number. Change via "MENU", "TV", "FEATURES", and "ON TIMER".
- **PRESET LOCK.** Indicates if the selected preset has a child lock: "LOCKED" or "UNLOCKED". Change via "MENU", "TV", "FEATURES", "CHILD LOCK", and "CUSTOM LOCK".

Customer Service Menu 4

- **CHILD LOCK.** Indicates the last status of the general child lock: "UNLOCK", "LOCK", or "CUSTOM LOCK". Change via "MENU", "TV", "FEATURES", "CHILD LOCK", and "LOCK".
- **AGE LOCK.** Indicates the last status of the EPG rating for child lock: "OFF", "4 YEARS", "6 YEARS", "8 YEARS", "10 YEARS", "12 YEARS", "14 YEARS" or "16 YEARS". This is only displayed if child lock is set to "CUSTOM LOCK"
- **LOCK AFTER.** Indicates at what time the child lock is set: "OFF" or e.g. "18:45" (lock time). This is only displayed if child lock is set to "CUSTOM LOCK"
- **CATEGORY LOCK.** Indicates the last status of the EPG theme childlock: "MOVIES", "NEWS", "SHOWS", "SPORTS", "CHILDREN", "MUSIC", "CULTURE", or "SERIES". This is only displayed if child lock is set to "CUSTOM LOCK". It is possible that more than one value is shown.
- **PROGRAM CATEGORY.** Indicates the theme of the selected transmitter: "MOVIES", "NEWS", "SHOWS", "SPORTS", "CHILDREN", "MUSIC", "CULTURE", or "SERIES".
- **TV RATINGS LOCK.** Only applicable for US.
- **MOVIE RATINGS LOCK.** Only applicable for US.
- **V-CHIP TV STATUS.** Only applicable for US.

Customer Service Menu 5

- **V-CHIP MOVIE STATUS.** Only applicable for US.
- **OPTIONS 1.** Gives the option codes of option group 1 as set in SAM (Service Alignment Mode).
- **OPTIONS 2.** Gives the option codes of option group 2 as set in SAM (Service Alignment Mode).
- **AVL.** Indicates the last status of AVL (Automatic Volume Level): "ON" or "OFF". Change via "MENU", "TV", "SOUND", "AVL"
- **DELTA VOLUME.** Indicates the last status of the delta volume for the selected preset as set by the customer: from "-12" to "+12". Change via "MENU", "TV", "SOUND", "DELTA VOLUME".
- **SURROUND TRIM L.** Indicates the last status of "SURROUND LEFT VOLUME" as set by the customer: from "-10" to "+10". Only available in Digital Dolby sets. Change via "MENU", "SETUP", "SPEAKERS", "SURROUND L VOLUME.
- **SURROUND TRIM R.** Indicates the last status of "Surround Right Volume" as set by the customer: from "-10" to "+10". Only available in Digital Dolby sets. Change via "MENU", "SETUP", "SPEAKERS", "SURROUND R VOLUME.
- **FRONT SPKR DIST.** Indicates the last status of the distance to the front speakers as set by the customer: "1m", "2m", or "3m",.... Change via "MENU", "SETUP", "SPEAKERS", "TO FRONT".
- **SURR. SPKR DIST.** Indicates the last status of the distance to the surround speakers as set by the customer: "1m", "2m", or "3m",. Change via "MENU", "SETUP", "SPEAKERS", "TO SURROUND".

How to exit CSM

Use one of the following methods:

- After you press a key on the RC-transmitter (with exception of the "CHANNEL", "VOLUME" and digit (0-9) keys), or
- After you switch the TV-set "OFF" with the mains switch.

5.3 Problems and Solving Tips (related to CSM)

Note: Below described problems are all related to the TV settings. The procedures to change the value (or status) of the different settings are described above. New value(s) are automatically stored.

5.3.1 Picture Problems

Snowy/noisy picture

1. Check line 24 "Noise Figure". In case the value is 127 or higher, and the value is also high on other programs, check the aerial cable/aerial system. For some software versions, the noise figure will only be valid when "Active Control" is set to "medium" or "maximum".
2. Check lines 11 "Sharpness" and 24 "Noise Figure". In case the value of line 11 is 3 or 4 and the value of line 24 is high (127 or higher), decrease the "Sharpness" value.

Picture too dark

1. Press "MENU", "TV", "PICTURE", "SMART PICTURE". In case the picture improves, increase the "Brightness" or the "Contrast" value. The new value(s) are automatically stored (in "personal" pre-set) for all TV channels.
2. Check line 7 "Brightness" and 8 "Contrast". If the value of line 7 is low (< 10) or the value of line 8 is low (< 10), increase the "Brightness" or the "Contrast" value.

Picture too bright

1. Press "MENU", "TV", "PICTURE", "SMART PICTURE". In case the picture improves, decrease the "Brightness" or the "Contrast" value. The new value(s) are automatically stored (in "personal" pre-set) for all TV channels.
2. Check lines 7 "Brightness" and 8 "Contrast". If the value of line 7 is high (> 40) or the value of line 8 is high (> 50). Decrease the "Brightness" value or increase the "Contrast" value.

White line around picture elements and text

1. Press "MENU", "TV", "PICTURE", "SMART PICTURE". In case the picture improves, decrease the "Sharpness" value. The new value is automatically stored (in "personal" pre-set) for all TV channels.
2. Check line 11 "Sharpness". Decrease the "Sharpness" value. The new value is automatically stored for all TV channels.

No picture

Check line 27 "Tuned bit". In case the value is "No", install the required program again. Open the installation menu and perform manual installation.

Blue picture

No proper signal is received. Check the aerial cable/aerial system.

Blue picture and/or unstable picture

A scrambled or decoded signal is received.

Black and white picture

Check line 9 "Colour". In case the value is low (< 10), increase the "Colour" value. The new value is automatically stored for all TV channels.

No colours/colour lines around picture elements or colours not correct or unstable picture

1. Check line 20 "TV System". If a "strange" system pops up, something has gone wrong during installation. Re-install the channel.
2. In case line 20 is "L", the installed system for this pre-set is "France", while "West Europe" is required. Install the required program again: open the installation menu and perform manual installation. Select system "West Europe".

Menu text not sharp enough

1. Press "MENU", "TV", "PICTURE", "SMART PICTURE". In case picture improves, decrease the contrast value. The new value(s) are automatically stored for all TV channels.
2. Check line 8 "Contrast". The value of line 8 is high (> 50). Decrease the contrast value.

5.3.2 Sound Problems

No sound from left and right speaker

Check line 6 "Volume". The value is low. Increase the value of "Volume". The new value(s) are automatically stored (in "personal" pre-set) for all TV channels.

Sound too loud for left and right speaker

Check line 6 "Volume". The value is high. Decrease the value of " Volume". The new value(s) are automatically stored (in "personal" pre-set) for all TV channels.

5.4 ComPair

5.4.1 Introduction

ComPair (Computer Aided Repair) is a service tool for Philips Consumer Electronics products. ComPair is a further development on the European DST (service remote control), which allows faster and more accurate diagnostics. ComPair has three big advantages:

- ComPair helps you to quickly get an understanding on how to repair the chassis in a short time by guiding you systematically through the repair procedures.
- ComPair allows very detailed diagnostics (on I^2C level) and is therefore capable of accurately indicating problem areas. You do not have to know anything about I^2C commands yourself because ComPair takes care of this.
- ComPair speeds up the repair time since it can automatically communicate with the chassis (when the microprocessor is working) and all repair information is directly available. When ComPair is installed together with the SearchMan electronic manual of the defective chassis, schematics and PWBs are only a mouse click away.

5.4.2 Specifications

ComPair consists of a Windows based faultfinding program and an interface box between PC and the (defective) product. The ComPair interface box is connected to the PC via a serial or RS232 cable.
For this chassis, the ComPair interface box and the TV communicate via a bi-directional service cable via the service connector.

The ComPair faultfinding program is able to determine the problem of the defective television. ComPair can gather diagnostic information in two ways:

- **Automatic** (by communication with the television): ComPair can automatically read out the contents of the entire error buffer. Diagnosis is done on I^2C level. ComPair can access the I^2C bus of the television. ComPair can send and receive I^2C commands to the micro controller of the television. In this way, it is possible for ComPair to communicate (read and write) to devices on the I^2C busses of the TV-set.
- **Manually** (by asking questions to you): Automatic diagnosis is only possible if the micro controller of the television is working correctly and only to a certain extends. When this is not the case, ComPair will guide you through the faultfinding tree by asking you questions (e.g. Does the screen give a picture? Click on the correct answer: YES / NO) and showing you examples (e.g. Measure test-point I7 and click on the correct oscillogram you see on the oscilloscope). You can answer by clicking on a link (e.g. text or a waveform picture) that will bring you to the next step in the faultfinding process.

By a combination of automatic diagnostics and an interactive question / answer procedure, ComPair will enable you to find most problems in a fast and effective way.

Beside fault finding, ComPair provides some **additional features** like:

- Up- or downloading of pre-sets.
- Managing of pre-set lists.
- Emulation of the Dealer Service Tool (DST).
- If both ComPair and SearchMan (Electronic Service Manual) are installed, all the schematics and the PWBs of the set are available by clicking on the appropriate hyperlink.
  Example: *Measure the DC-voltage on capacitor C2568 (Schematic/Panel) at the Mono-carrier.*
  - Click on the "Panel" hyperlink to automatically show the PWB with a highlighted capacitor C2568.
  - Click on the "Schematic" hyperlink to automatically show the position of the highlighted capacitor.

5.4.3 Stepwise Start-up

Under normal circumstances, a fault in the power supply, or an error during start-up, will switch the television to protection mode. ComPair can take over the initialisation of the television. In this way, it is possible to distinguish which part of the start-up routine (hence which circuitry) is causing the problem. Take notice that the transition between two steps can take some time, so give the set some time to reach a stable state. During the transition time the LED can blink strangely.

Stepwise start- up explanation

This is realised via ComPair and is very helpful when a protection is activated (see also chapter "Protections").

Table 5-2 Stepwise start-up table

State	Description mode	Display LED	Enabled protection
0	Low power standby: 5V2/3V3 present, uP in standby-mode	On	None
1	High power Standby: TV-set in standby-mode	Wait 1s, flash 1 x	None
2	Main Power On: HOP in standby, 5V/8V present, I^2C protections on, SSB is powered by standby-supply (5V/8V). Degaussing (12 s) has been activated, MSP is reset.	Wait 1s, flash 2 x	4 & 5
3	Initialized (Semi standby): most IC's are initialized, HOP still in standby	Wait 1s, flash 3 x	Plus 1, 6 & 18
4	HOP: HOP fully powered and working, EHT is present, rest of IC's initialized, black current stabilisation is off, picture is still blanked	Wait 1s, flash 4 x	Plus 2 & 16
5	On: TV-set operates, black current stabilisation is on, picture is unblanked.	Wait 1s, flash 5 x	

Note (*):

- When the set is in stepwise mode and, due to stepping-up, a protection is activated, the set will really go into protection (blinking LED). The set will not leave the stepwise-mode however. If state X is the state where the set went to protection, stepwise start-up will return to state X-1. At state (X-1) diagnostic measurements can be performed. Also, in the short time the set is in state X but not yet in protection, you can also do some measurements.

5.4.4 How To Connect

This is described in the chassis fault finding database in ComPair .

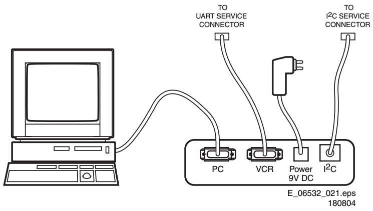


Figure 5-2 ComPair interface connection

5.4.5 How To Order

ComPair order codes (EU/AP/LATAM):

- Starter kit ComPair32/SearchMan32 software and ComPair interface (excl. transformer): 3122 785 90450.
- ComPair interface (excluding transformer): 4822 727 21631.
- Starter kit ComPair32 software (registration version): 3122 785 60040.
- Starter kit SearchMan32 software: 3122 785 60050.
- ComPair32 CD (update): 3122 785 60070 (year 2002, 3122 785 60110 (year 2003).
- SearchMan32 CD (update): 3122 785 60080 (year 2002), 3122 785 60120 (year 2003), 3122 785 60130 (year 2004).
- ComPair interface cable: 3122 785 90004.
- ComPair firmware upgrade IC: 3122 785 90510.
- Transformer (non-UK): 4822 727 21632.
- Transformer UK: 4822 727 21633.
- Additional ComPair interface cable: 3139 131 03791.

Note: If you encounter any problems, contact your local support desk.

5.5 Error Codes

5.5.1 Introduction

The error code buffer contains all detected errors since the last time the buffer was erased. The buffer is written from left to right, new errors are logged at the left side, and all other errors shift one position to the right.
When an error has occurred, the error is added to the list of errors, provided the list is not full or the error is a protection error.
When an error occurs and the error buffer is full, then the new error is not added, and the error buffer stays intact (history is maintained), except when the error is a protection error.
To prevent that an occasional error stays in the list forever, the error is removed from the list after 50+ operation hours.
When multiple errors occur (errors occurred within a short time span), there is a high probability that there is some relation between them.

5.5.2 How to read the Error Buffer

Use one of the following methods:

- On screen via the SAM (only if you have a picture).
  Examples:
  - **0 0 0 0 0:** No errors detected
  - **6 0 0 0 0:** Error code 6 is the last and only detected error
  - **9 6 0 0 0:** Error code 6 was first detected and error code 9 is the last detected error
- Via the blinking LED procedure (when you have no picture). See next paragraph.
- Via ComPair.

5.5.3 How to clear the Error Buffer

Use one of the following methods:

- By activation of the "RESET ERROR BUFFER" command in the SAM menu.
- With a normal RC, key in sequence "MUTE" followed by **"062599"** and "OK".
- When you transmit the commands "DIAGNOSE" - "99" - "OK" with ComPair (or with a DST).
- If the content of the error buffer has not changed for 50+ hours, it resets automatically.

5.5.4 Error Codes

In case of non-intermittent faults, clear the error buffer before you begin the repair. This to ensure that old error codes are no longer present. Before clearing the buffer, write down the content, as this history can give you significant information.

If possible, check the entire contents of the error buffer. In some situations, an error code is only the result of another error code and not the actual cause (e.g., a fault in the protection detection circuitry can also lead to a protection).

There are various errors:

- I^2C device errors.
- I^2C bus errors.
- Protection errors.
- Errors not related to an I^2C device, but of importance:
  - **BLACK CURRENT LOOP (ERROR 28):** detection of a continuous fail of the black current stabilisation loop of the HOP.
  - **FEM (ERROR 26):** at start-up, after initialisation of the PICNIC, the presence of the FALCONIC can be checked.
  - **EAGLE (ERROR 27):** at start-up, after initialisation of the PICNIC, the presence of the Eagle can be checked.

Table 5-3 Error table.

Error	Device	Description	Def. item	Defect. module indication	Diagram
1	M24C32	NVM, spontaneous blinking error 1	7011	Control	B5a
2	Hfail Protection	Horizontal Flyback protection	/	Horizontal Flyback	/
3	SAA4978	PICNIC	7713	Feature Box	B3a
4	Supply 5V	5V protection	/	+5V Supply	B5a
5	Supply 8V	8V protection	/	+8V Supply	B5a
6	Slow I^2C bus blocked	Spontaneous blinking error 6	/	Slow I^2C Blocked	/
7	TDA9330	HOP High-end Output Processor	7301	Video Controller	B4
8	TDA932x	HIP High-end Input Processor	7323	Chroma IF IO	B2
12	TDA9178	Topic	7302	Video Controller	B4
13	UV1318/...	Tuner protection	1200	Tuner	A8
14	MSPxxxx	ITT sound processor	7651	Audio module	B6a
16	FBX	Feature Box Protection	/	+3V (Fbx) Supply	B3
18	Fast I^2C bus blocked	Spontaneous blinking error 18	/	Fast I^2C Blocked	/
26	SAA4998	FEM	7760	+3V (Fbx) Supply	B3b
27	T6TX5EF	Eagle	7724	+3V (Fbx) Supply	B3c
28	Black current loop	Black current loop	/	Video Controller	/
32	M29W400BT	Flash Ram (EPG)	7012	EPG Memory	B5a

Note:
Error codes 1, 6, or 18 are protection codes and in this case, supplies of some circuits will be switched "OFF". Also, in protection, the LED will blink the number of times equivalent to the most recent error code.

5.6 The Blinking LED Procedure

5.6.1 Introduction

Via this procedure, you can make the contents of the error buffer visible via the front LED. This is especially useful for fault finding, when there is no picture.

When the SDM is entered, the front LED will show (blink) the contents of the error-buffer. Error-codes = 10 are shown as follows:

- A long blink of 750 ms (which is an indication of the decimal digit),
- A pause of 1.5 s,
- "n" short blinks (where "n" = 1 - 9),
- When all the error-codes are displayed, the sequence finishes with a LED blink of 3 s,
- The sequence starts again.

Example: Error 12 9 6 0 0.
After activation of the SDM, the red front LED will show:

- 1 long blink of 750 ms (which is an indication of the decimal digit) followed by a pause of 1.5 s,
- 2 short blinks followed by a pause of 3 s,
- 9 short blinks followed by a pause of 3 s,
- 6 short blinks followed by a pause of 3 s,
- 1 long blink of 3 s to finish the sequence,
- The sequence starts again.

Note: If errors 1, 6 or 18 occur, the LED always gives the last occurred error even if the set is NOT in service mode.

5.6.2 How to Enter

Use one of the following methods:

- Enter the SDM (only via soldering pads marked "SDM" on SSB). The blinking red front LED will show the entire contents of the error buffer (this works in "normal operation" mode and in "protection" mode).
- Transmit the commands "MUTE" - **"062500"** - "OK" with a normal RC. The complete error buffer is shown. Take notice that it takes some seconds before the blinking led LED starts.
- Transmit the commands "MUTE" - **"06250x"** - "OK" with a normal RC (where "x" is a number between 1 and 5). When x= 1 the last detected error is shown, x= 2 the second last error, etc.... Take notice that it takes some seconds before the blinking led LED starts.
- "DIAGNOSE X" with the DST (where "x" is a number between 1 and 5). When x= 1 the last detected error is shown, x= 2 the second last error, etc.... When x = 0 all errors are shown.

5.7 Protections

5.7.1 Introduction

This chassis has only one microprocessor (OTC), which remains active during Standby. This because power of the microprocessor and the attached memory chip set is coming from the 3V3 supply, which is derived from the 5V Standby-circuitry. Therefore, in both Power-on as in Standby mode, the microprocessor is connected to this power supply.

If a fault situation is detected, an error code will be generated and if necessary, the set is put in protection mode. The protection mode is indicated by the blinking of the front LED at a frequency of 3 Hz (or by a coded blinking in special cases). In some error cases however, the microprocessor does not put the set in the protection mode (this is the case with the - hardware - loudspeaker protection of the audio amplifier).

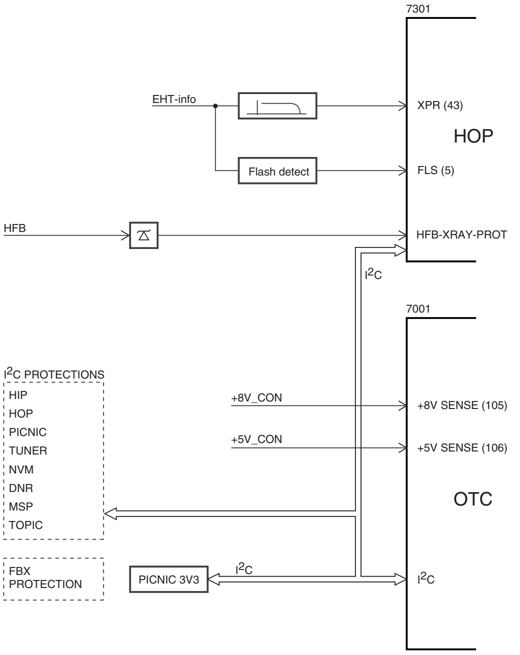
The content of the error buffer can be read via the service menu (SAM), the blinking LED procedure or via DST/ComPair.

To get a quick diagnosis, this chassis has three service-modes implemented:

- The **Customer Service Mode (CSM).**
- The **Service Default Mode (SDM).** Start-up of the set in a predefined way.
- The **Service Alignment Mode (SAM).** In this mode, items of the set can be adjusted via a menu.

You can enter both SDM and SAM modes via the 'service pads' on the SSB, via an RC-transmitter (DST or standard RC), or via ComPair. It is not possible to enter the SAM in "standby"; the TV has to be in "normal operation" mode.

The "Protection Diagram" shows the structure of the protection system. See diagram below.



CL 16532044_024.eps
090501

Figure 5-3 Protection diagram

There are several types of protections:

- I^{2}C related protections.
- OTC related protections (via polling on I/O pins or via algorithms).
- HOP related protections (mainly for deflection items).
- Hardware errors that are not sensed by the OTC (e.g. vertical flyback protection, bridge coil protection, E/W protection, arcing protection).

All protections are explained below.

5.7.2 I2C Related Protections

In normal operation, some registers of the I^{2}C controlled ICs are refreshed every 200 ms. During this sequence, the I^{2}C busses and the I^{2}C ICs are checked.
An I^{2}C protection will take place if the SDA and SCL lines are short-circuited to ground, or to each other. An I^{2}C error will also occur, if the power supply of the IC is missing (e.g. FBX_PROT (error 16)).

5.7.3 OTC Related Protections

If a protection is detected at an OTC input, the OTC will start to scan all protection inputs every 200 ms for 5 times. If the protection on one of the inputs is still active after 1 s, the microprocessor will put the set in the protection mode.
Before the scanning is started, a so-called "ESD refresh" is carried out. This is done, because the interrupt on one of the inputs is possibly caused either by a flash or by ESD. As a flash or ESD can influence IC settings, the HIP, MSP, 3D Comb (US only) and wireless module are initialised again, to ensure the normal picture and sound conditions of the set.

8 V and 5 V protection: The microprocessor senses the presence of the 8 V and 5 V (via the "+5V_CON" and "+8V_CON" lines). If one (or both) of these voltages is (are) not present, an error code is stored in the error buffer of the NVM, and the set is put in the protection mode.

5.7.4 HOP Related Protections

Every 200 ms, the status register of the HOP is read by the OTC (via the I^{2}C bus). If a protection signal is detected on one of the inputs of the HOP, the relevant error bit in the HOP register is set to "high". If this error bit is still "high" after 1 s, the OTC will store the error code in the error buffer of the NVM and, depending on the relevancy of the error bit, the set will either go into the protection mode or not.

The following protections are implemented:

- **HFB (Horizontal Flyback):** If the horizontal flyback is not present, this is detected via the HOP (HFB_X-RAY_PROT). One status bit is set to "high". The error code is stored in the error buffer and the set will go into the protection mode.
- **XPR (X-ray protection):** If the HFB pulses are too low (level detection), the HOP will detect this via the XPR-bit. The error will be logged in the error buffer and the set will go into protection mode.

Note: Both errors will be logged as HFB-failure.

5.7.5 Hardware Related Protections

Due to the architecture ("hot" deflection), some protections cannot be sensed by the microprocessor. Three of these protections will lead to a protection on set level (Standby mode and blinking LED), while another will only lead to a circuit protection.

TV-set Protection
The following fault conditions will lead to a "complete" set protection:

- **BRIDGECOIL protection:** This is sensed via the "EW" signal going to the base of TS7652 (via R3495 and D6499). In a normal situation, the voltage on C2498 (diagram A4) is high and TS7652 is conducting. When bridge coil 5422 (diagram A3) is short circuited, the voltage on C2498 changes to low, which will block TS7652. In this case, also TS7641 will block and the voltage on 2642 will rise until TS7443 is forced in conduction. The "SUP-ENABLE" signal (in normal operating condition -20 V) is shorted now to ground level, which will force the Main Power Supply to Standby mode.
- **ARC protection:** If there are "open" connections (e.g. bad solder joints) in the high-energy deflection circuitry, this can lead to damaging effects (read: fire). For that reason, the E/W current is sensed (via 3479//3480). If this current becomes too high, the "thyristor" circuit (TS7653 and TS7654) is triggered. TS7442 is switched "on" and TS7443 is forced into conduction. . The "SUP-ENABLE" signal is shorted now to ground level, which will force the Main Power Supply to Standby mode.
- **NON_VFB (No vertical Flyback) protection:** If the frame stage generates no pulses, TS7641 will block. TS7443 is now switched "on", which will lead to Standby mode. Therefore, in normal operation condition, TS7641 and TS7652 are conducting, while TS7443 is blocked.

Circuit Protection
The following fault condition will lead to a "partly" set protection:

- **PROT1 (DC) protection:** When a DC-voltage (positive or negative) is sensed on one of the loudspeaker outputs, the protection circuit (TS7704, 7705, 7706 and 7707 in diagram A6) will put the IC7700 in Standby mode (via tri-state input pin 6). For more details, see chapter "Circuit Descriptions".

5.8 Repair tips

5.8.1 Miscellaneous

The relay you hear when you switch the set "on" (from Standby or via the mains switch), is from the degaussing circuitry. It is not used for switching the Power Supply (as done in the MG-chassis).

Take care not to touch the "hot" heatsink while disconnecting the SSB, despite the fact that the mains cord is out of the mains socket. There can still be an annoying rest-voltage on the heatsink for a short while. This, because the discharge resistors 3502 and 3503 (on the LSP between hot and cold part) are not stuffed for Europe. Instead, discharge resistors 3066 and 3057 on the Mains Switch panel are used, but because they are located before the Mains switch, they only discharge when this switch is "on".
Advice: when you remove the SSB, disconnect the Mains cord, but keep the Mains Switch "on".

Do not try to measure on the SSB side, which is facing the 'hot' heatsink. This is dangerous. Most service test points are guided to the 'tuner' side and are indicated by the 'service' printing.
Where the circuitry was too "crowded" for service printing, you can find the correct location on the "test point overviews" in this manual.
A very large part of the LSP is "**hot**", such as:

- The primary part of the Standby Supply.
- The whole Main supply (except for the secondary Audio supply).
- And the complete deflection circuitry (so notice that the deflection coil is hot!).

5.8.2 Start-up Sequence

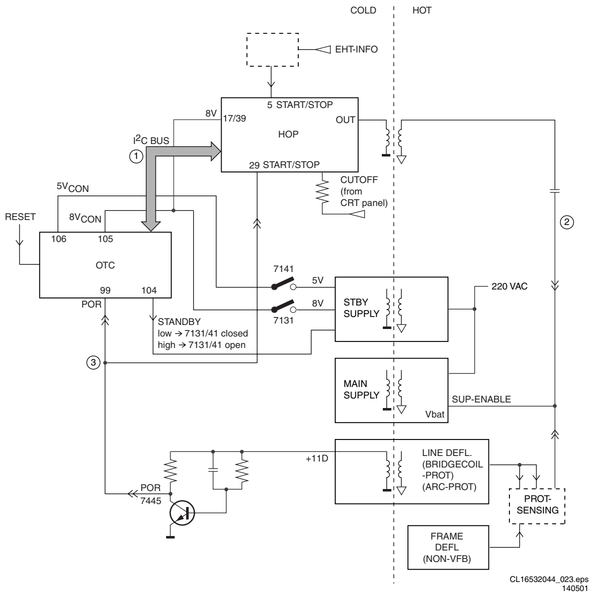


Figure 5-4 Start-up circuitry

The start up sequence differs from other sets (e.g. MG-sets or EM2E-sets, but is same as in EM3E-set):

1. When the set is switched "on", the 5 and 8 V lines ("+5V_CON" and "+8V_CON") of the standby power supply are activated.
2. After the OTC senses them, the P will address the HOP via the I^2C-bus, to start the drive [1].
3. Via the "SUP-ENABLE" signal, the Main Supply is switched "on" and will deliver the V_BAT to the Line deflection stage [2].
4. EHT generation is now started.
5. The OTC will un-blank the picture.
6. When you switch "off" the set, this is done in a controlled way via the POR signal [3].

Note: Standby is not directly achieved via the Standby line of the microprocessor, but indirectly via the HOP circuitry.

5.8.3 ComPair

This chassis does not have an IR transmitting LED (as in MG-sets). Therefore, a "Service" (ComPair) connector is implemented at the rear side of the set, which is directly accessible (as in A10-, EM2E-, EM3E and EM5E-sets). In addition to this, there is also a blinking LED procedure to show the contents of the error buffer.

When you use ComPair, you have the possibility to activate a "stepwise start-up" mode. With this mode, you can initiate the start-up sequence step by step. This also means that in certain steps, some protections are not activated. This is sometimes very convenient during repair.

5.8.4 Protections

Activating SDM via the "service pads" will overrule the processor-controlled protections, but not the hardware protections. This means, that the A/D-input protections (5 and 8 V) and the I^2C "not-acknowledging" info of the feature box (FBX) and of the Tuner are overruled.
Caution: When doing this, the service technician must know what he is doing, as it could lead to damaging the set.

The "ARC"- and/or "BRIDGECOIL" protection are hardly ever triggered, however:

- When you suspect the "ARC" protection, look for bad solder joints and smell. By interrupting resistor 3497, this protection is disabled (special attention needed!).
- When you suspect the "BRIDGECOIL" protection, which can also be due to a too wide picture amplitude, shorten G and S of the E/W MOSFET 7480. This will disable the protection. You will now have minimal horizontal amplitude. Re-align the horizontal amplitude in the SAM menu and remove the G/S short of TS7480.

5.8.5 Main Supply

The simplest way is, to replace the components of the Main Supply with repair kit 3122 785 90310.

More detailed way:

1. Replace FET 7504 and zener 6505.
2. Remove the SSB panel.
3. Short B and E of TS7529, in order to put the Main Supply in "on"-mode (TS7529 is blocking then).
   Caution: To prevent that R3403 and TS7443 will be damaged, **first disable the HW-protection of the deflection circuit.** Therefore short circuit C2642 on the LSP (diagram A4).
4. Attach a load of 500 O to V_BAT capacitor C2515 (the supply can not work without a minimum load).
5. Use a variac, and slowly increase the V_MAINS. Measure over sensing resistors R3514//15, if a nice sawtooth voltage becomes available.
6. Also measure the V_BAT. This may never exceed +141 V. If it does, there is something wrong in the feedback circuitry (e.g. regulator 7506).

Note: Be careful when measuring on the gate of FET TS7504. This circuitry is very high ohmic and can easily be damaged (first connect ground to measuring equipment, than measure the gate).

5.8.6 Standby Supply

The simplest way is to replace the components of the Standby Supply with repair kit 3122 785 90460.

5.8.7 Line Deflection

The simplest way is to replace the components of the Line Deflection circuitry with repair kit 3122 785 90330.

5.8.8 Frame Deflection

Caution: When the Frame Deflection circuitry is suspected, one must be careful. Because there is a DC-voltage on the frame deflection, **the beam current could damage the CRT neck, leading to a defective CRT.**

To prevent this from happening, you must:

1. Interrupt the resistors 3403 and 3404 on the CRT panel (diagram F1), in order to remove the "filament" voltage from the tube (no beam current, so no chance of destroying the CRT).
2. Interrupt resistor 3403 on the LSP (diagram A4) to disable the "SUP-ENABLE" line.
3. Measure with a multi-meter, or better with a oscilloscope, the functionality of the Frame stage.
4. After you have found the cause, exchange the defective component (e.g. TDA8177), and re-solder the interrupted resistors.

Table 5-4 Repair Tips

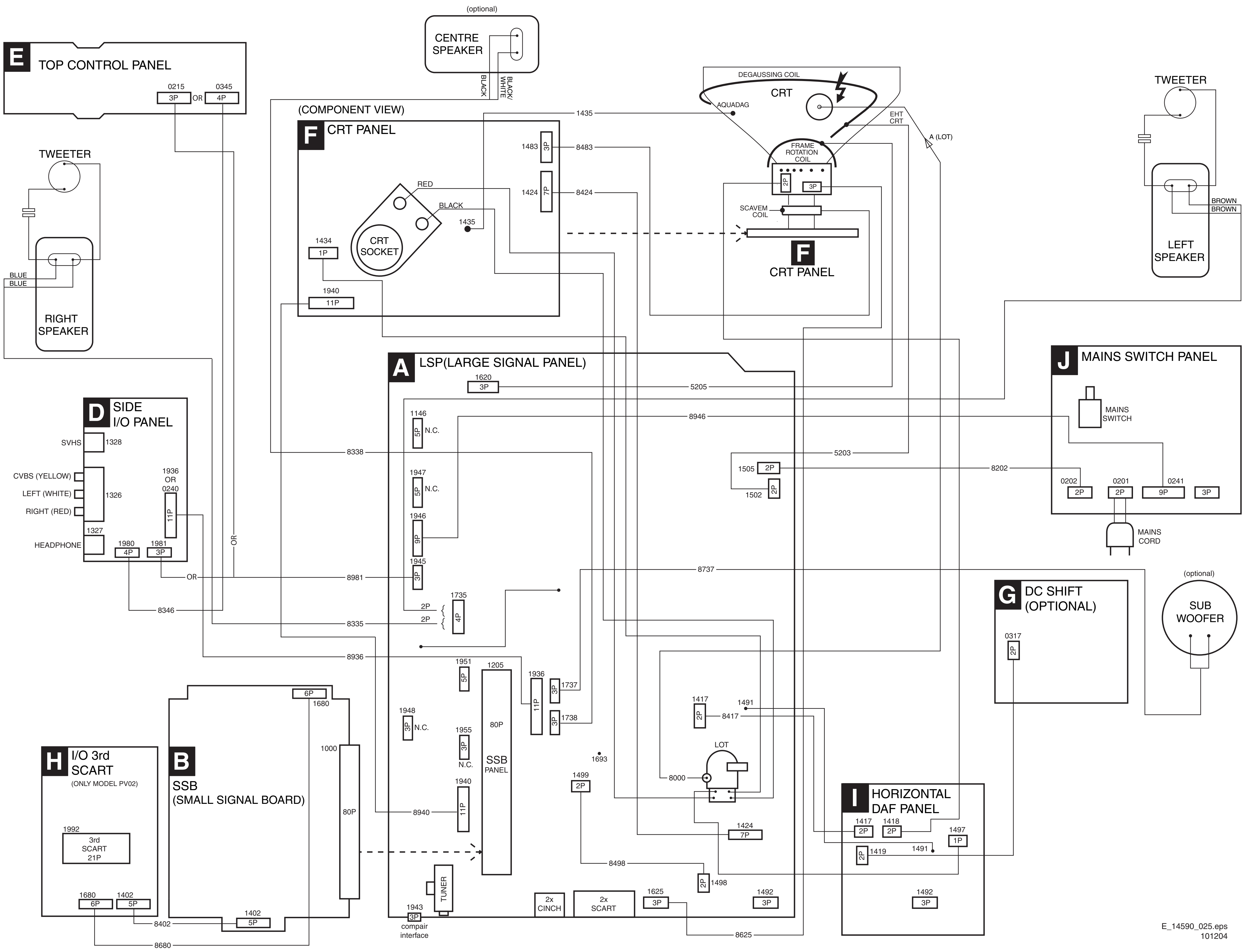
Phenomenon	Possible Cause	Repair tip
No picture, no LED.	Standby Supply defective.	Measure circuitry (see diagram A2). Start at test-point A19. When the Mains switch is 'on', this voltage must always be available
No picture, no LED.	Bad connection of SSB in SIMM-connector.	In case of a bad connection, it can happen that there is no picture, and that the Standby LED is not controllable. Re-place the SSB.
No picture, LED blinking at 3 Hz.	Set is in protection due to various causes. For error codes see error-code list.	You have no picture, so: - Read the error buffer via ComPair (error buffer is accessible when set is in protection, compare-file will guide you to this) - Read the blinking LED information via standard remote command <mute>06250X<ok> - Or you read the error code sequence via standard remote command <mute>062500<ok>. When you have found the error, check the circuitry related to the supply voltage and I^2C-communication or the circuitry that triggers the protection.
No picture, LED blinking with code 6-6-6 or 18-18-18.	No communication on slow I^2C- or fast I^2C-bus.	As processor cannot communicate with one of the 2 busses it the standby-led spontaneously starts blinking 6-6-6... or 18-18-18... If in the error buffer somewhere is an error 6 or 18, these will have the highest priority starting the mentioned blinking. Measure dependent of the error on the I^2C-bus which device is loading the bus. (Use I^2C -overview)
No picture, LED blinking with code 1-1-1.	No communication on NVM- I^2C bus to the uP.	As the uP cannot communicate with the NVM I^2C bus, it spontaneously starts blinking 1-1-1. **Note:** when there is no access to the NVM, a lot of picture setting can go wrong.
No picture, no sound. Set is making audible squeaking sound	Supply is possibly in hiccup-mode, which is audible via a squeaking supply transformer.	Possible causes: - V_{BAT} is shorted (caused by short circuited line transistor 7421), or - Sound winding is shorted (amplifier is shortening the power supply lines), or - D6514 is shorted (due to a too high V_{BAT}). Remove excessive load, to see what causes the failure, or check feedback circuit. See repair tip 'Main Power Supply' (supply needs a minimal load).
No picture, no sound. Power LED works fine	Supply does not work correctly.	If e.g. V_{BAT} is only about 90 V, it is possible that the regulator IC (7506) is defective.
No RC-reception. LED does not echo RC-commands.	uP circuitry or RC-receiver is defective.	In case the set does react on a local keyboard operation, you must check the RC-receiver circuitry.
Relay (degaussing) is not audible, when set is switched from 'off' or 'standby' to 'on'.	uP is not working correctly.When pin 115 is low, the degaussing must be activated.	Check RESET-circuitry on diagram B5. Check the level on pin 115 when you switch the set 'on'. Signal must be low initially and go to high after approx. 12 s.
Picture is rotated.	Rotation circuitry on diagram A5, or related supply to it, malfunctions.	Measure test points on diagram A5.
Picture is continuously switching 'off' and 'on', showing heavy 'switch' spots (set does not go into protection).	200 V is missing on CRT panel.	Probably a bad connection from LSP connector 1424 to CRT connector 1424 (diagram F), or an interruption of the 200 V supply line (e.g. R3341 on circuit F is interrupted).
Picture is not sharp.	Focus is possibly mis-aligned or SCAVEM-circuitry does not work correctly.	Re-align the 'focus' potmeter on the Line Output Transformer, or check the SCAVEM circuitry on the CRT-panel (diagram F). It is also possible that the DAF circuitry is defective (see diagram I). Check the Vdc values.
Picture is not synchronised.	The sync is derived in the HIP from x-tal 1305 and/or 1308.	Maybe the crystals 1305 and/or 1308 are making a bad contact.
Picture is distorted.	Check video-path in Service Default Mode.	Investigate whether there is an error code present in the error buffer. In case there is one, check the I^2C -bus and/or supply lines (see overview supply lines). Measure and check signal path Tuner-HIP-PICNIC-HOP-RGB amplifier.In case it is a geometry issue, check on diagram A4 opto-coupler 7482, Opamps 7440/7450 and the Frame circuitry alignments or a possible corrupted NVM (7011) on diagram B5.
No menu, no OSD.	Probably a defective uP.	Measure test points B61to B64 on diagram B5.
How to measure on IC's		It is advisable to measure both on the pins itself and the solder pads on the PWB. This to find possible solder faults.

Personal Notes:

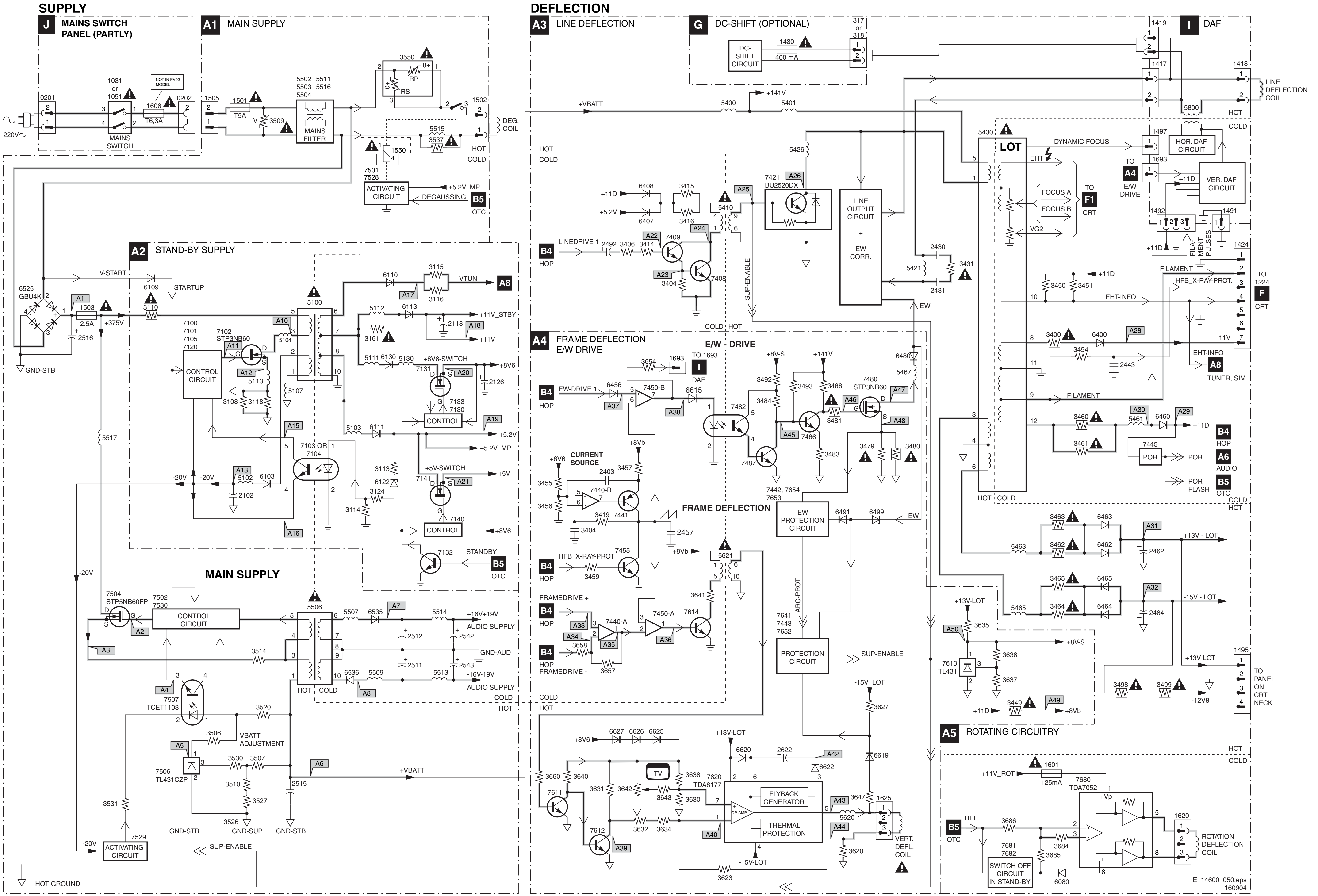
E_06532_012.eps
131004

6. Block Diagrams, Testpoint Overviews, and Waveforms

Wiring Diagram

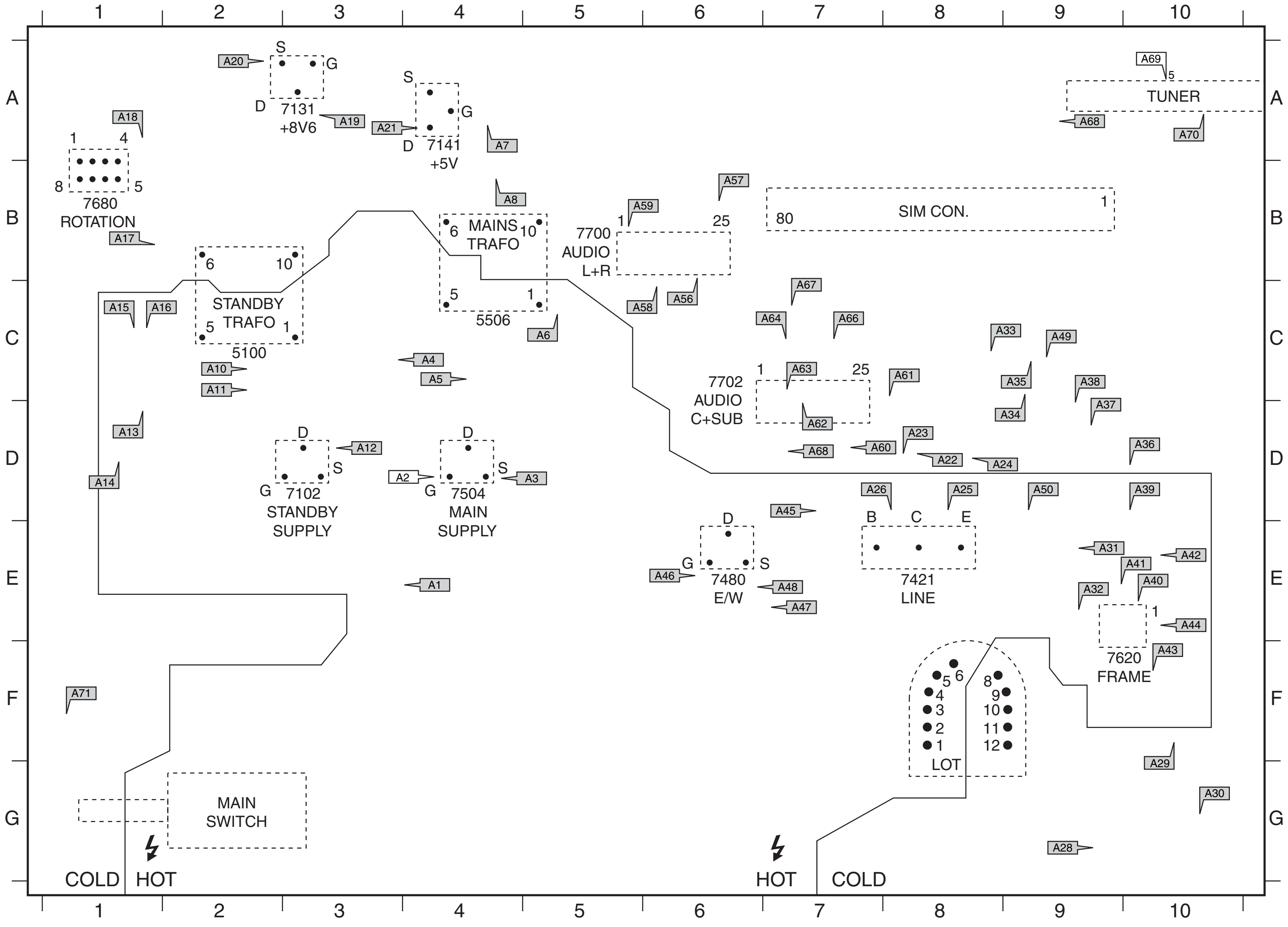

(optional)
CENTRE SPEAKER
BLACK
BLACK/ WHITE
E
TOP CONTROL PANEL
0215
3P
OR
0345
4P
TWEETER
BLUE
BLUE
RIGHT SPEAKER
(COMPONENT VIEW)
F
CRT PANEL
1435
1483
3P
8483
1424
7P
8424
RED
BLACK
1435
1434
1P
CRT SOCKET
1940
11P
DEGAUSSING COIL
CRT
AQUADAG
EHT CRT
A (LOT)
FRAME ROTATION COIL
2P
3P
SCAVEM COIL
F
CRT PANEL
TWEETER
BROWN
BROWN
LEFT SPEAKER
A
LSP(LARGE SIGNAL PANEL)
1620
3P
5205
1146
5P
N.C.
8946
8338
5203
1505
2P
1502
2P
8202
1947
5P
N.C.
1946
9P
1945
3P
8981
8737
2P
2P
1735
4P
8335
8936
D
SIDE I/O PANEL
SVHS
1328
CVBS (YELLOW)
LEFT (WHITE)
RIGHT (RED)
1326
1936 OR 0240
11P
1327
HEADPHONE
1980
4P
1981
3P
OR
OR
8346
J
MAINS SWITCH PANEL
MAINS SWITCH
0202
2P
0201
2P
0241
9P
3P
MAINS CORD
G
DC SHIFT (OPTIONAL)
0317
2P
(optional)
SUB WOOFER
1951
5P
1205
80P
SSB PANEL
1936
11P
3P
1737
3P
1738
1948
3P
N.C.
1955
3P
N.C.
1940
11P
8940
1693
1499
2P
8498
1417
2P
8417
1491
LOT
8000
1424
7P
2P
1498
1625
3P
1492
3P
8625
TUNER
1943
3P
compair interface
2x CINCH
2x SCART
B
SSB (SMALL SIGNAL BOARD)
6P
1680
1000
80P
1402
5P
8402
8680
H
I/O 3rd SCART
(ONLY MODEL PV02)
1992
3rd SCART 21P
1680
6P
1402
5P
I
HORIZONTAL DAF PANEL
1417
2P
1418
2P
1497
1P
2P
1419
1491
1492
3P
E_14590_025.eps
101204

Block Diagram Supply and Deflection


SUPPLY
J MAINS SWITCH PANEL (PARTLY)
A1 MAIN SUPPLY
A2 STAND-BY SUPPLY
MAIN SUPPLY
DEFLECTION
A3 LINE DEFLECTION
G DC-SHIFT (OPTIONAL)
I DAF
A4 FRAME DEFLECTION E/W DRIVE
E/W - DRIVE
FRAME DEFLECTION
A5 ROTATING CIRCUITRY
220V~
MAINS SWITCH
1031 or 1051
NOT IN PV02 MODEL
1606 T6,3A
0201
0202
1505
1501 T5A
3509
5502 5503 5504
5511 5516
MAINS FILTER
3550 RP RS
1502 DEG. COIL
5515
3537
1550
7501 7528
ACTIVATING CIRCUIT
+5.2V_MP
DEGAUSSING
B5 OTC
HOT
COLD
V-START
6525 GBU4K
6109 STARTUP
3110
1503 2.5A
+375V
2516
GND-STB
7100 7101 7105 7120
CONTROL CIRCUIT
7102 STP3NB60
A10 A11 A12
5104
5113
5100
3108 3118
5107
6110
3115 3116
VTUN A8
A17
5112 6113
+11V_STBY
3161
2118
A18
+11V
5111 6130 5130 +8V6-SWITCH
7131
A20
+8V6
2126
7133 7130
CONTROL
A19
+5.2V
+5.2V_MP
5103 6111
A15
7103 OR 7104
3113
6122
+5V-SWITCH
7141
A21
+5V
3124
3114
-20V
A13 5102 6103
2102
A16
7140
CONTROL
+8V6
7132 STANDBY
B5 OTC
5517
7504 STP5NB60FP
7502 7530
CONTROL CIRCUIT
A2 A3
5506
5507 6535 A7
5514
+16V+19V AUDIO SUPPLY
2512 2542
GND-AUD
3514
2511 2543
6536 5509 5513
-16V-19V AUDIO SUPPLY
A8
A4 7507 TCET1103
3520
3506 VBATT ADJUSTMENT
A5
7506 TL431CZP
3530 3507
3510 3527
A6
+VBATT
2515
3531
3526
GND-STB GND-SUP GND-STB
7529 ACTIVATING CIRCUIT
SUP-ENABLE
HOT GROUND
DC-SHIFT CIRCUIT
1430 400 mA
317 or 318
+VBATT
5400 +141V 5401
5426
B4 HOP
LINEDRIVE 1
2492 3406 3414
A22 7409
A23 3404 7408
A24
6408 3415
+11D
+5.2V
6407 3416
A25 5410
7421 BU2520DX A26
LINE OUTPUT CIRCUIT + EW CORR.
SUP-ENABLE
2430 5421 3431 2431
EW
COLD HOT
1419 1417 1418
LINE DEFLECTION COIL
5800
5430
LOT
DYNAMIC FOCUS
EHT
FOCUS A
FOCUS B
VG2
TO F1 CRT
1497 HOR. DAF CIRCUIT
TO A4 E/W DRIVE
1693
VER. DAF CIRCUIT
1492 1491
FILA-MENT PULSES
1424
FILAMENT
HFB_X-RAY-PROT.
3450 3451
EHT-INFO
TO 1224 F CRT
3400 6400 A28
3454 2443
11V
EHT-INFO A8 TUNER, SIM
FILAMENT
3460 A30 5461 6460 A29
+11D
B4 HOP
3461
7445 POR
POR A6 AUDIO
POR FLASH B5 OTC
HOT COLD
3463 6463 A31
5463 3462 6462
+13V - LOT
2462
3465 6465 A32
5465 3464 6464
-15V - LOT
2464
+13V-LOT
A50 3635
+8V-S
7613 TL431
3636 3637
+13V LOT
1495
TO PANEL ON CRT NECK
3498 3499
-12V8
+11D 3449 A49 +8Vb
3654 1693 TO 1693 I DAF
B4 HOP
EW-DRIVE 1 6456 7450-B
A37
6615
A38
7482
+8V-S +141V
3492 3493 3488
7480 STP3NB60
A46 A47
3484 3481
A45 7486
A48
5467 6480
3483
7487
3479 3480
+8V6 CURRENT SOURCE
2403 3457
7440-B
3455 3456
3419 7441
3404
2457
+8Vb
7442, 7654 7653
EW PROTECTION CIRCUIT
6491 6499 EW
B4 HOP
HFB_X-RAY-PROT 7455
3459
5621
ARC-PROT
FRAMEDRIVE +
B4 HOP
A33 A34 7440-A
3658 A35
7450-A A36
3641 7614
B4 HOP FRAMEDRIVE -
3657
7641 7443 7652
PROTECTION CIRCUIT
SUP-ENABLE
COLD HOT
-15V_LOT
3627
+8V6 6627 6626 6625
+13V-LOT
6620 2622 A42
6622
3660 3640
7611
3631 3642 TV 3638 3643 3630
7620 TDA8177
FLYBACK GENERATOR
OP. AMP
THERMAL PROTECTION
A43 3647 1625
5620
A44
VERT. DEFL. COIL
6619
7612 A39
3632 3634
A40
-15V-LOT
3620
3623
HOT COLD
1601 +11V_ROT 125mA
7680 TDA7052
+Vp
B5 OTC TILT
3686
7681 7682
3684 3685
1620
ROTATION DEFLECTION COIL
SWITCH OFF CIRCUIT IN STAND-BY
6080
E_14600_050.eps 160904

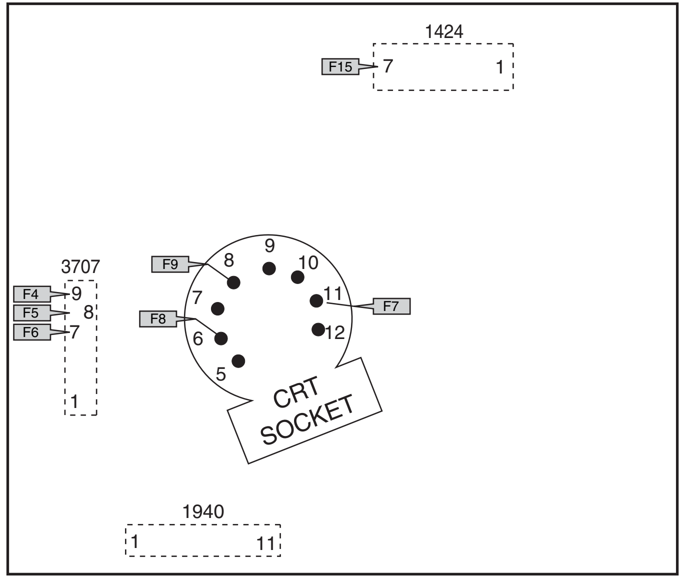
Testpoint Overview LSP and CRT Panel

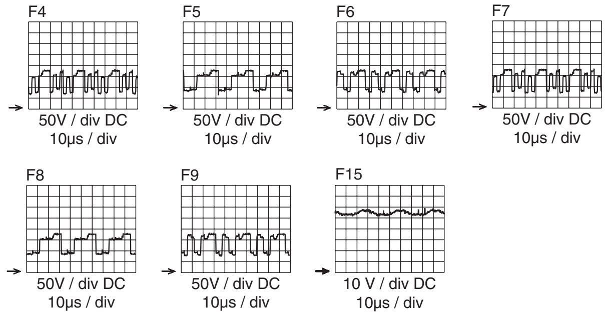
LSP COPPER TRACK SIDE

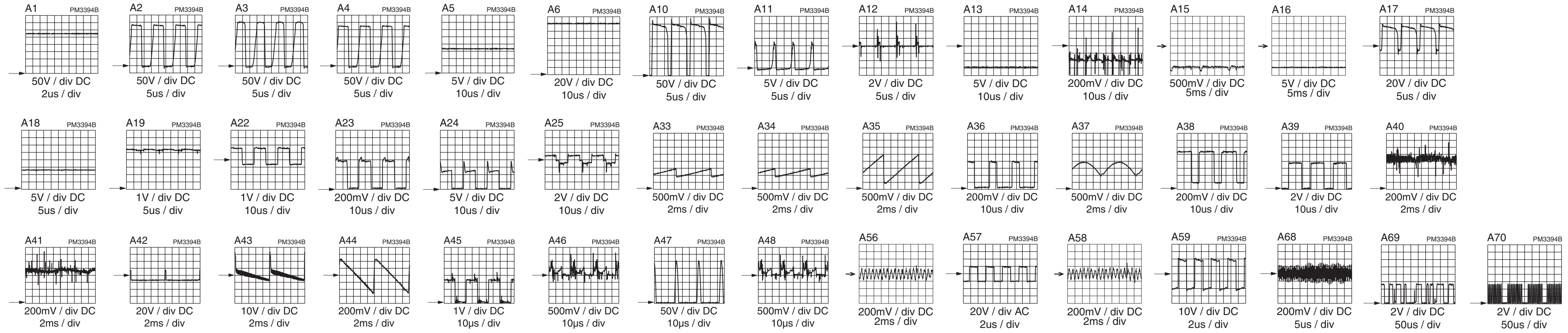

1 2 3 4 5 6 7 8 9 10
A B C D E F G
7680
ROTATION
1 4 8 5
A18
A17
7131
+8V6
S G D
A20
A19
7141
+5V
A21
A7
A8
MAINS TRAFO
6 10 5 1
5506
A6
STANDBY TRAFO
6 10 5 1
5100
A15
A16
A10
A11
A4
A5
A13
A14
7102
STANDBY SUPPLY
A12
7504
MAIN SUPPLY
A2
A3
A1
A71
MAIN SWITCH
COLD
HOT
A59
7700
AUDIO
L+R
1 25
A58
A56
A57
SIM CON.
80 1
A67
A64
A66
7702
AUDIO
C+SUB
A63
A62
A61
A68
A60
A23
A22
A24
A45
7480
E/W
A46
A48
A47
A26
A25
7421
LINE
B C E
A33
A49
A35
A38
A34
A37
A36
A50
A39
A31
A42
A41
A40
A32
A44
A43
7620
FRAME
LOT
1 2 3 4 5 6 8 9 10 11 12
A29
A30
A28
A69
TUNER
A70

A1	E4
A3	D4
A4	C4
A5	C4
A6	C5
A7	A4
A8	B4
A10	C2
A11	C2
A12	D3
A13	D1
A14	D1
A15	C1
A16	C1
A17	B1
A18	A1
A19	A3
A20	A2
A21	A3
A22	D8
A23	D8
A24	D8
A25	D8
A26	D7
A28	G9
A29	G10
A30	G10
A31	E9
A32	E9
A33	C8
A34	D9
A35	C9
A36	D10
A37	D9
A38	C9
A39	D10
A40	E10
A41	E10
A42	E10
A43	F10
A44	E10
A45	D7
A46	E6
A47	E7
A48	E7
A49	C9
A50	D9
A56	C6
A57	B6
A58	C6
A59	B5
A60	D7
A61	C8
A62	D7
A63	D7
A64	C7
A66	C7
A67	C7
A70	A10
A71	F1
A88	A9

CRT PANEL (COPPER TRACK SIDE)

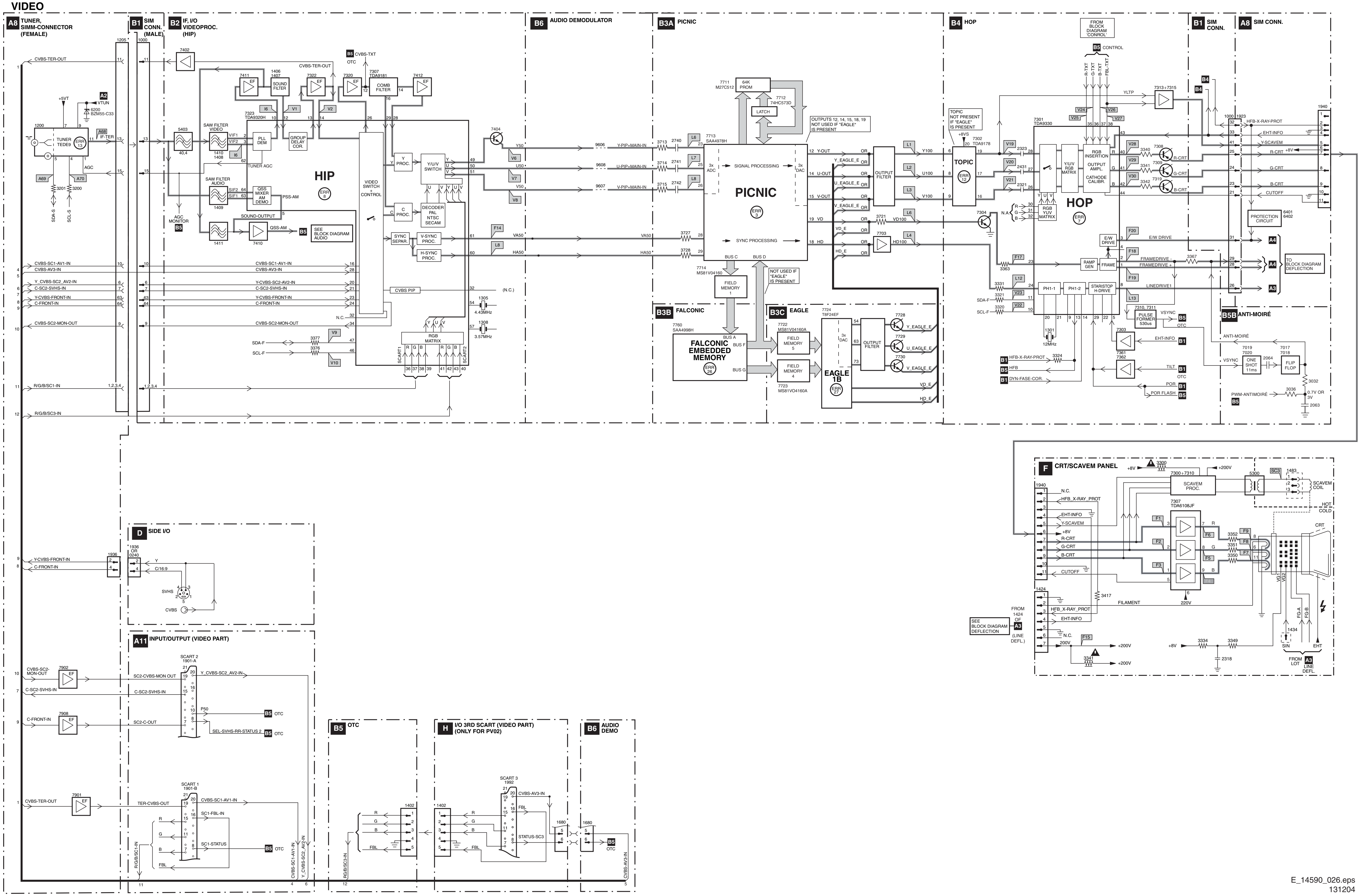

1424
F15
7 1
3707
F4
F5
F6
9 8 7 1
F9
F8
F7
5 6 7 8 9 10 11 12
CRT SOCKET
1940
1 11





E_14590_027.eps
131204

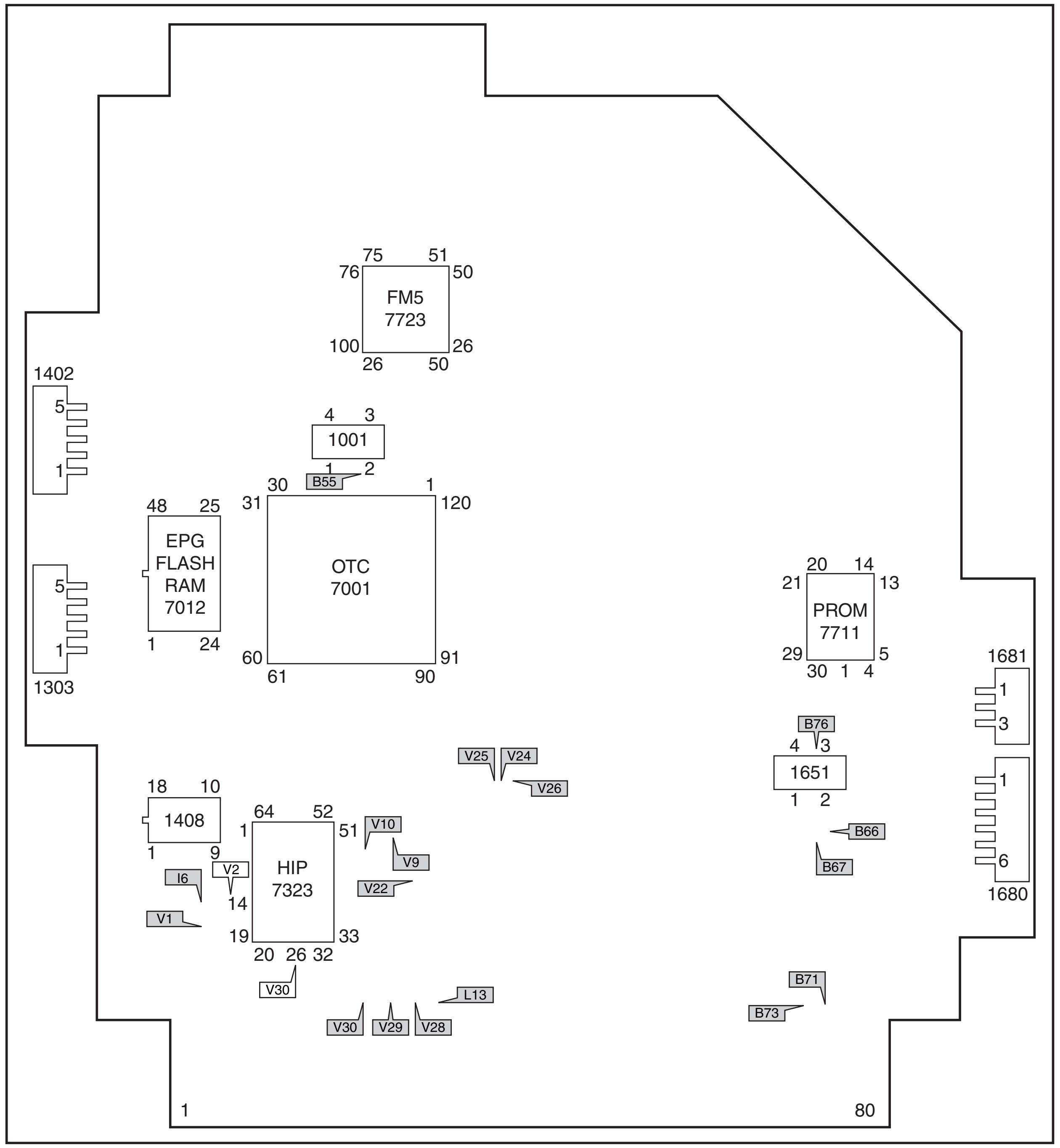
Block Diagram Video


VIDEO
A8 TUNER, SIMM-CONNECTOR (FEMALE)
B1 SIM CONN. (MALE)
B2 IF, I/O VIDEOPROC. (HIP)
B6 AUDIO DEMODULATOR
B3A PICNIC
B4 HOP
B1 SIM CONN.
A8 SIM CONN.
1200 TUNER TEDE9
ERR 13
IF-TER
VTUN
6200 BZM55-C33
+5VT
AGC
3201
3200
SDA-S
SCL-S
CVBS-TER-OUT
1205
1000
7402
5403
SAW FILTER VIDEO
VIF1
VIF2
1410 1408
PLL DEM
GROUP DELAY COR.
TUNER AGC
SAW FILTER AUDIO
SIF2
SIF1
QSS MIXER AM DEMO
PSS-AM
1409
SOUND-OUTPUT
QSS-AM
7410
1411
SEE BLOCK DIAGRAM AUDIO
AGC MONITOR
7411 EF
1406 1407 SOUND FILTER
7322 EF
7320 EF
7307 TDA9181 COMB FILTER
7412 EF
B5 CVBS-TXT OTC
7323 TDA9320H
HIP
ERR 8
VIDEO SWITCH + CONTROL
Y PROC.
C PROC.
Y/U/V SWITCH
DECODER PAL NTSC SECAM
SYNC SEPAR.
V-SYNC PROC.
H-SYNC PROC.
CVBS PIP
(N.C.)
1305 4.43MHz
1308 3.57MHz
RGB MATRIX
SCART1
SCART2
SDA-F
SCL-F
3377
3376
CVBS-SC1-AV1-IN
CVBS-AV3-IN
Y_CVBS-SC2_AV2-IN
C-SC2-SVHS-IN
Y-CVBS-FRONT-IN
C-FRONT-IN
CVBS-SC2-MON-OUT
R/G/B/SC1-IN
R/G/B/SC3-IN
7404
Y50
U50
V50
VA50
HA50
9606 Y-PIP+MAIN-IN
9608 U-PIP+MAIN-IN
9607 V-PIP+MAIN-IN
7711 M27C512 64K PROM
7712 74HC573D LATCH
7713 SAA4978H
3x ADC
SIGNAL PROCESSING
3x DAC
PICNIC
ERR 5
SYNC PROCESSING
OUTPUTS 12, 14, 15, 18, 19 NOT USED IF "EAGLE" IS PRESENT
Y-OUT
U-OUT
V-OUT
VD
HD
Y_EAGLE_E
U_EAGLE_E
V_EAGLE_E
VD_E
HD_E
OUTPUT FILTER
BUS C
BUS D
7714 MS81V04160 FIELD MEMORY 1
NOT USED IF "EAGLE" IS PRESENT
B3B FALCONIC
7760 SAA4998H
FALCONIC EMBEDDED MEMORY
ERR 26
BUS A
BUS F
BUS G
B3C EAGLE
7724 T8F24EF
7722 MS81V04160A FIELD MEMORY 5
7723 MS81V04160A FIELD MEMORY 4
EAGLE 1B
ERR 27
3x DAC
OUTPUT FILTER
7728
7729
7730
Y100
U100
V100
VD100
HD100
TOPIC NOT PRESENT IF "EAGLE" IS PRESENT
7302 TDA9178
TOPIC
ERR 12
FROM BLOCK DIAGRAM 'CONROL'
B5 CONTROL
R-TXT
G-TXT
B-TXT
FBL-TXT
YLTP
7313+7315
7301 TDA9330
RGB INSERTION
OUTPUT AMPL.
CATHODE CALIBR.
Y/U/V RGB MATRIX
RGB YUV MATRIX
HOP
ERR 7
7304
E/W DRIVE
RAMP GEN
FRAME
PH1-1
PH1-2
STARTSTOP H-DRIVE
7310, 7311 PULSE FORMER 530us
VSYNC
1301 12MHz
HFB-X-RAY-PROT
HFB
DYN-FASE-COR.
EHT-INFO
TILT
POR
POR FLASH
7303
7361 7362
R-CRT
G-CRT
B-CRT
7305
7306
7319
CUTOFF
Y-SCAVEM
E/W DRIVE
FRAMEDRIVE+
FRAMEDRIVE-
LINEDRIVE1
TO BLOCK DIAGRAM DEFLECTION
PROTECTION CIRCUIT
6401 6402
1940
1923
B5B ANTI-MOIRÉ
ANTI-MOIRÉ
7019 7020 ONE SHOT 11ms
7017 7018 FLIP FLOP
PWM-ANTIMOIRE
0.7V OR 3V
F CRT/SCAVEM PANEL
7300+7310 SCAVEM PROC.
5300
SCAVEM COIL
HOT COLD
7307 TDA6108JF
CRT
N.C.
HFB_X-RAY_PROT
EHT-INFO
Y-SCAVEM
+8V
R-CRT
G-CRT
B-CRT
CUTOFF
FILAMENT
220V
+200V
1424
FROM 1424 OF A3 (LINE DEFL.)
SEE BLOCK DIAGRAM DEFLECTION
200V
3341
3334
3349
2318
SIN
EHT
FG-A
FG-B
1434
FROM LOT A3 LINE DEFL.
D SIDE I/O
1936
SVHS
CVBS
Y
C/16:9
A11 INPUT/OUTPUT (VIDEO PART)
CVBS-SC2-MON-OUT
7902 EF
C-SC2-SVHS-IN
C-FRONT-IN
7908 EF
SCART 2 1901-A
SC2-CVBS-MON OUT
C-SC2-SVHS-IN
SC2-C-OUT
P50
SEL-SVHS-RR-STATUS 2
B5 OTC
CVBS-TER-OUT
7901 EF
SCART 1 1901-B
TER-CVBS-OUT
CVBS-SC1-AV1-IN
SC1-FBL-IN
SC1-STATUS
R
G
B
FBL
R/G/B/SC1-IN
CVBS-SC1-AV1-IN
Y_CVBS-SC2_AV2-IN
B5 OTC
1402
R/G/B/SC3-IN
H I/O 3RD SCART (VIDEO PART) (ONLY FOR PV02)
SCART 3 1992
CVBS-AV3-IN
STATUS-SC3
1680
B6 AUDIO DEMO
CVBS-AV3-IN

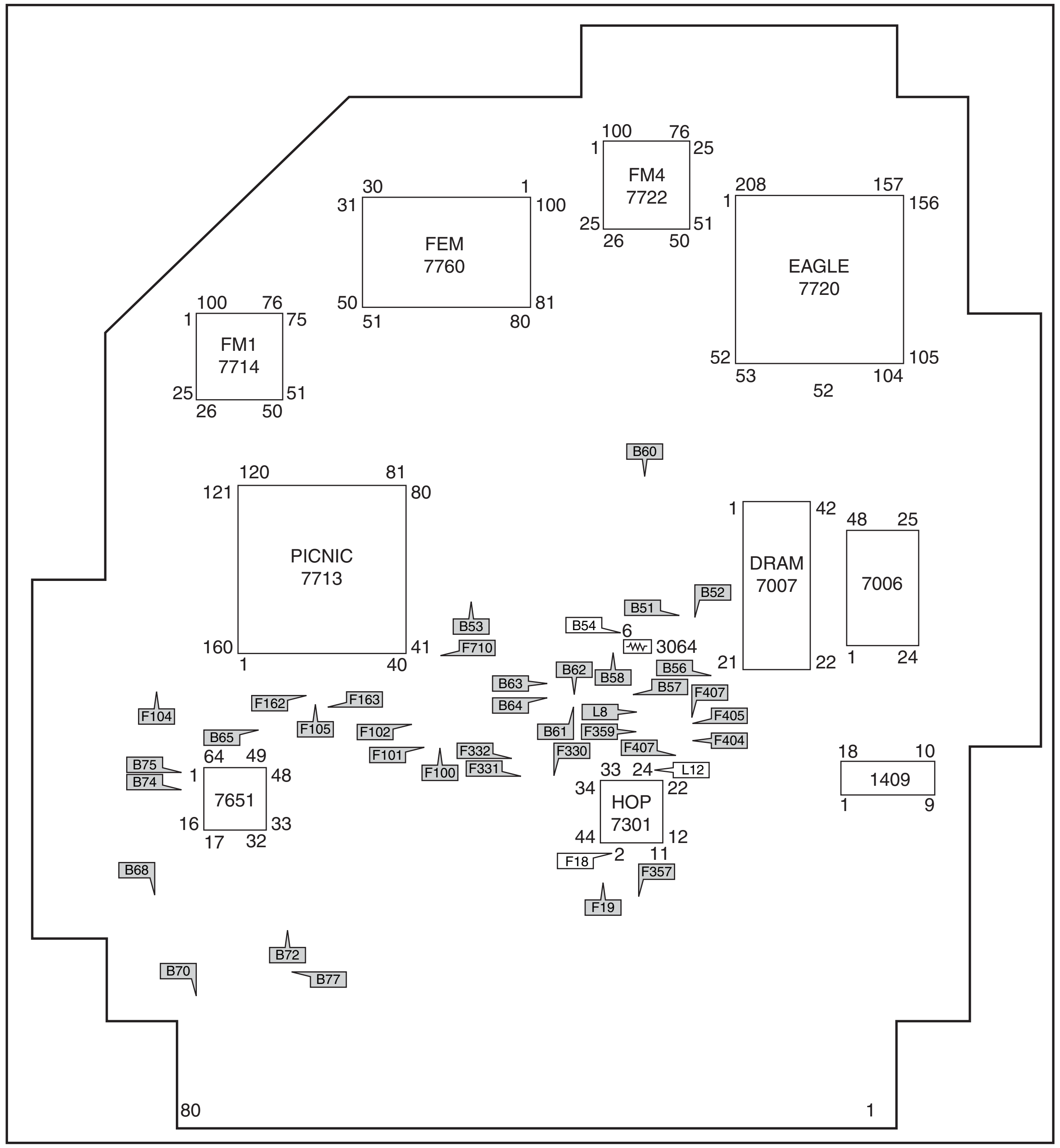
E_14590_026.eps
131204

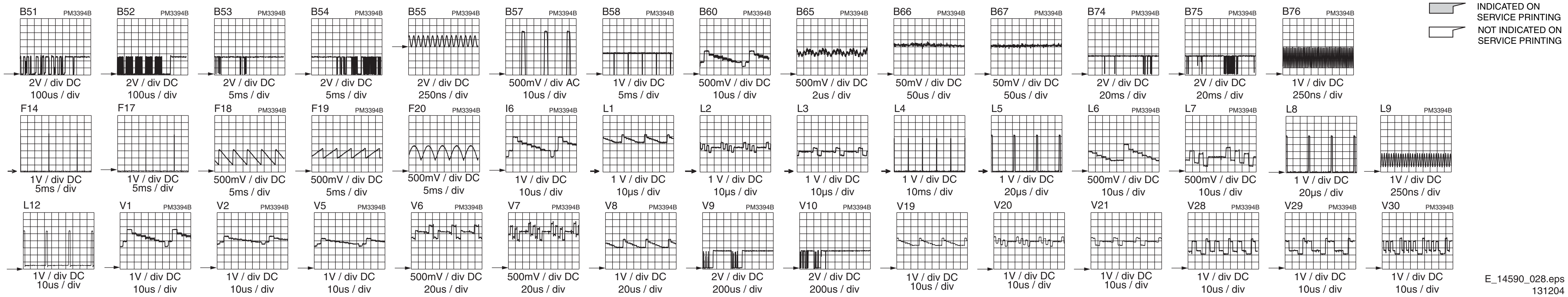
Testpoint Overview Small Signal Board

SSB SIDE A


FM5
7723
1001
EPG
FLASH
RAM
7012
OTC
7001
PROM
7711
1402
1303
1681
1680
1651
1408
HIP
7323
B55
B66
B67
B71
B73
B76
I6
L13
V1
V2
V9
V10
V22
V24
V25
V26
V28
V29
V30
1
80

SSB SIDE Z

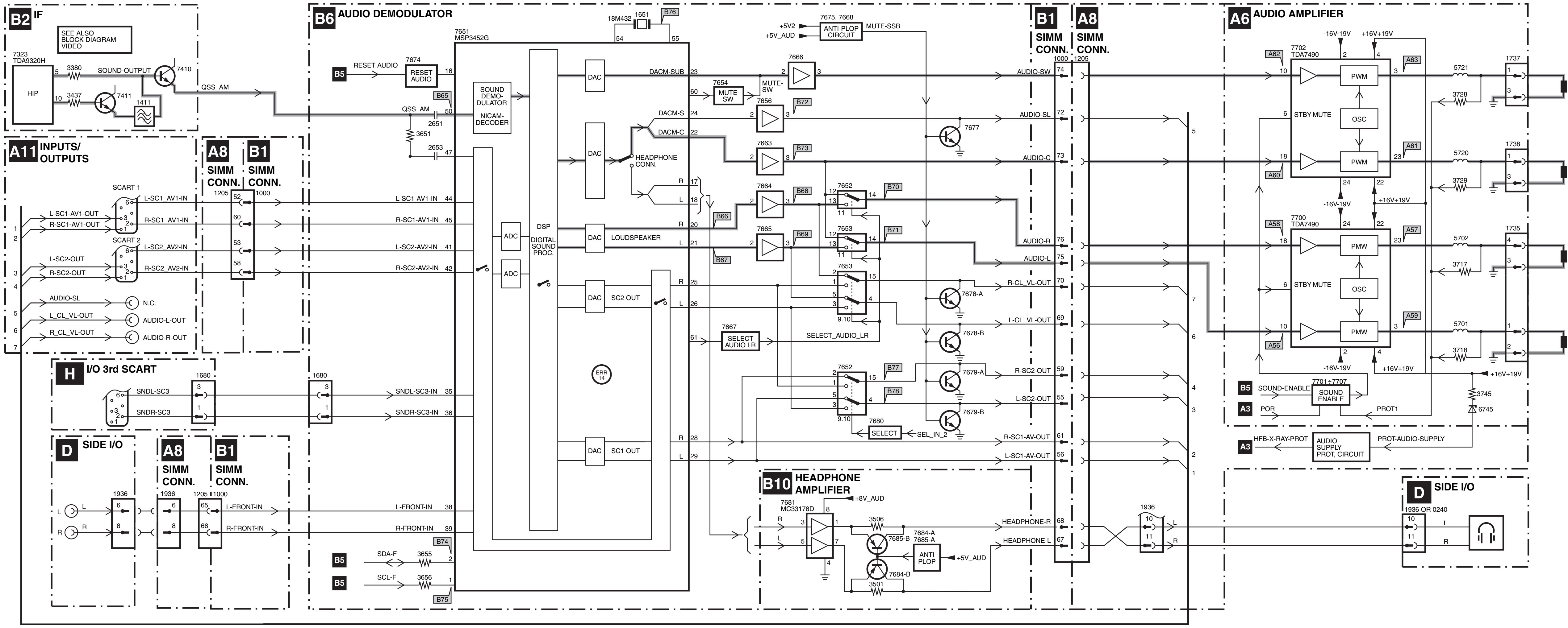

FM4
7722
FEM
7760
EAGLE
7720
FM1
7714
PICNIC
7713
DRAM
7007
7006
7651
HOP
7301
1409
3064
B51
B52
B53
B54
B56
B57
B58
B60
B61
B62
B63
B64
B65
B68
B70
B72
B74
B75
B77
F18
F19
F100
F101
F102
F104
F105
F162
F163
F330
F331
F332
F357
F359
F404
F405
F407
F710
L8
L12
80
1



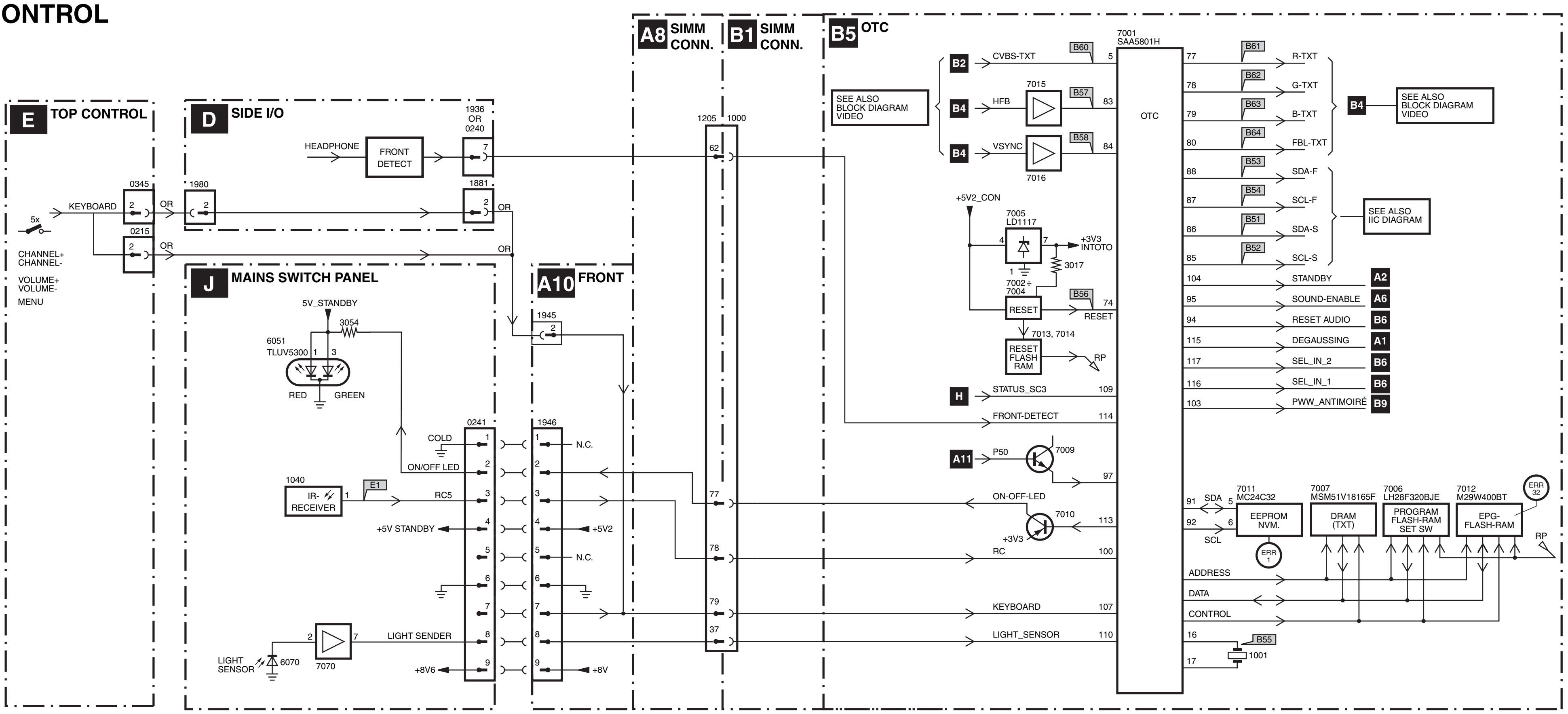
E_14590_028.eps
131204

Block Diagram Audio 1 (Exclusive Wireless Audio Details)

AUDIO


B2 IF
SEE ALSO BLOCK DIAGRAM VIDEO
7323 TDA9320H
HIP
SOUND-OUTPUT
QSS_AM
A11 INPUTS/ OUTPUTS
SCART 1
SCART 2
L-SC1-AV1-OUT
R-SC1-AV1-OUT
L-SC2-OUT
R-SC2-OUT
AUDIO-SL
L_CL_VL-OUT
R_CL_VL-OUT
N.C.
AUDIO-L-OUT
AUDIO-R-OUT
A8 SIMM CONN.
B1 SIMM CONN.
H I/O 3rd SCART
SNDL-SC3
SNDR-SC3
D SIDE I/O
L-FRONT-IN
R-FRONT-IN
B6 AUDIO DEMODULATOR
7651 MSP3452G
RESET AUDIO
SOUND DEMODULATOR
NICAM-DECODER
ADC
DSP
DIGITAL SOUND PROC.
DAC
DACM-SUB
DACM-S
DACM-C
HEADPHONE CONN.
LOUDSPEAKER
SC2 OUT
SC1 OUT
SDA-F
SCL-F
MUTE SW
ANTI-PLOP CIRCUIT
MUTE-SSB
SELECT AUDIO LR
SELECT_AUDIO_LR
SELECT
SEL_IN_2
B10 HEADPHONE AMPLIFIER
7681 MC33178D
ANTI PLOP
HEADPHONE-R
HEADPHONE-L
AUDIO-SW
AUDIO-SL
AUDIO-C
AUDIO-R
AUDIO-L
R-CL_VL-OUT
L-CL_VL-OUT
R-SC2-OUT
L-SC2-OUT
R-SC1-AV-OUT
L-SC1-AV-OUT
A6 AUDIO AMPLIFIER
7702 TDA7490
7700 TDA7490
PWM
OSC
STBY-MUTE
SOUND-ENABLE
POR
SOUND ENABLE
PROT1
HFB-X-RAY-PROT
AUDIO SUPPLY PROT. CIRCUIT
PROT-AUDIO-SUPPLY
SUBWOOFER (OPTIONAL) 15W/8ohm
CENTRE (OPTIONAL) 15W/8ohm
R 15W/8ohm
L 15W/8ohm
D SIDE I/O
1936 OR 0240

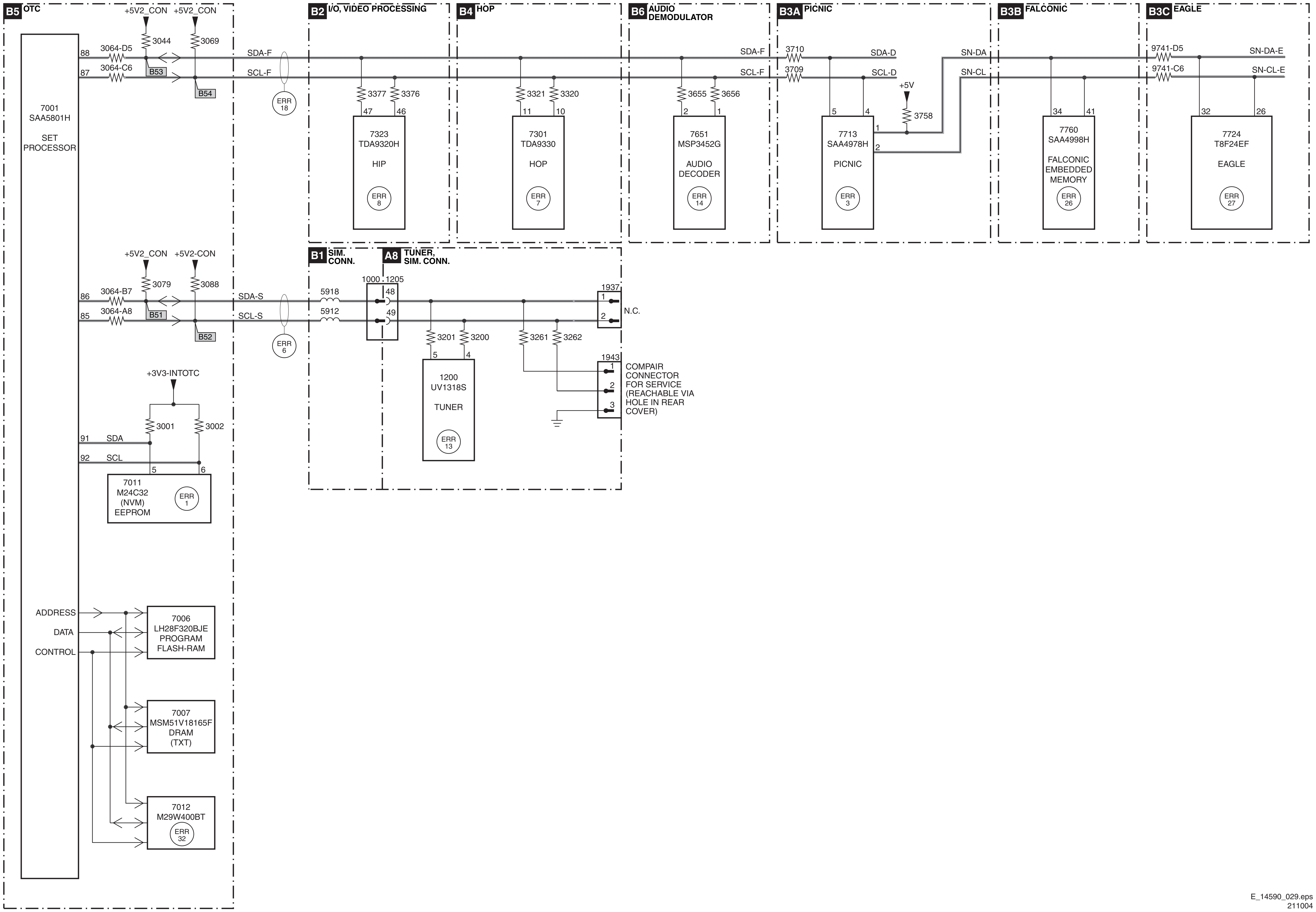
CONTROL


E TOP CONTROL
KEYBOARD
CHANNEL+
CHANNEL-
VOLUME+
VOLUME-
MENU
D SIDE I/O
HEADPHONE
FRONT DETECT
J MAINS SWITCH PANEL
5V_STANDBY
6051 TLUV5300
RED
GREEN
COLD
ON/OFF LED
1040 IR-RECEIVER
RC5
+5V STANDBY
LIGHT SENDER
LIGHT SENSOR
A10 FRONT
N.C.
+5V2
+8V6
+8V
A8 SIMM CONN.
B1 SIMM CONN.
B5 OTC
7001 SAA5801H
OTC
CVBS-TXT
HFB
VSYNC
SEE ALSO BLOCK DIAGRAM VIDEO
7005 LD1117
+3V3 INTOTO
RESET
RESET FLASH RAM
STATUS_SC3
FRONT-DETECT
ON-OFF-LED
RC
KEYBOARD
LIGHT_SENSOR
R-TXT
G-TXT
B-TXT
FBL-TXT
SDA-F
SCL-F
SDA-S
SCL-S
SEE ALSO IIC DIAGRAM
STANDBY
SOUND-ENABLE
RESET AUDIO
DEGAUSSING
SEL_IN_2
SEL_IN_1
PWW_ANTIMOIRÉ
7011 MC24C32 EEPROM NVM.
7007 MSM51V18165F DRAM (TXT)
7006 LH28F320BJE PROGRAM FLASH-RAM SET SW
7012 M29W400BT EPG-FLASH-RAM
ADDRESS
DATA
CONTROL

E_14600_053.eps
101204

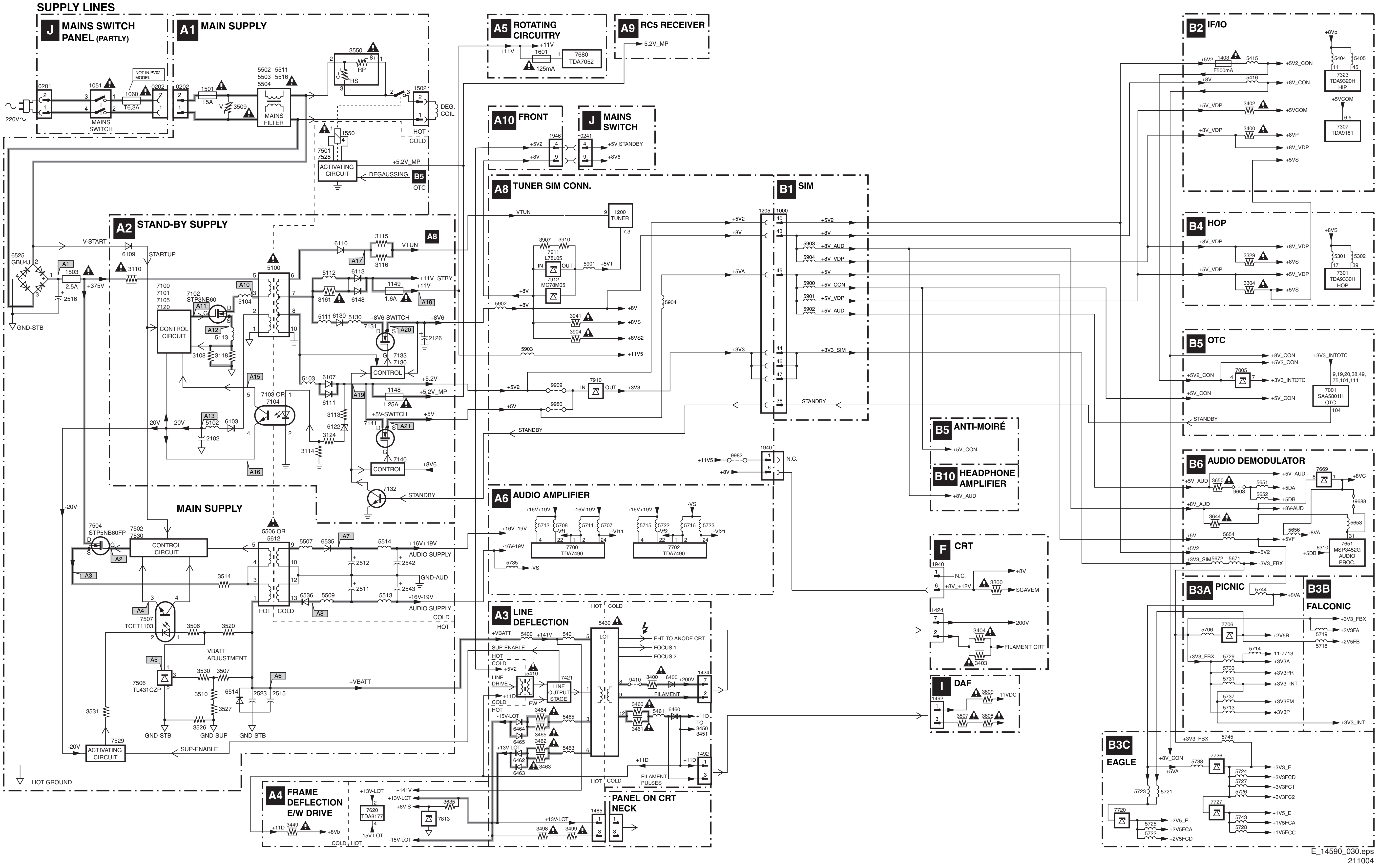
I2C IC's overview

IIC


B5 OTC
+5V2_CON
+5V2_CON
3044
3069
88
3064-D5
87
3064-C6
B53
B54
SDA-F
SCL-F
ERR 18
7001
SAA5801H
SET PROCESSOR
B2 I/O, VIDEO PROCESSING
3377
3376
47
46
7323
TDA9320H
HIP
ERR 8
B4 HOP
3321
3320
11
10
7301
TDA9330
HOP
ERR 7
B6 AUDIO DEMODULATOR
SDA-F
SCL-F
3655
3656
2
1
7651
MSP3452G
AUDIO DECODER
ERR 14
B3A PICNIC
3710
3709
SDA-D
SCL-D
+5V
3758
5
4
1
2
7713
SAA4978H
PICNIC
ERR 3
SN-DA
SN-CL
B3B FALCONIC
34
41
7760
SAA4998H
FALCONIC EMBEDDED MEMORY
ERR 26
B3C EAGLE
9741-D5
9741-C6
SN-DA-E
SN-CL-E
32
26
7724
T8F24EF
EAGLE
ERR 27
+5V2_CON
+5V2-CON
3079
3088
86
3064-B7
85
3064-A8
B51
B52
SDA-S
SCL-S
ERR 6
B1 SIM. CONN.
A8 TUNER, SIM. CONN.
5918
5912
1000
1205
48
49
3201
3200
5
4
1200
UV1318S
TUNER
ERR 13
3261
3262
1937
1
2
N.C.
1943
1
2
3
COMPAIR CONNECTOR FOR SERVICE (REACHABLE VIA HOLE IN REAR COVER)
+3V3-INTOTC
3001
3002
91
SDA
92
SCL
5
6
7011
M24C32
(NVM)
EEPROM
ERR 1
ADDRESS
DATA
CONTROL
7006
LH28F320BJE
PROGRAM
FLASH-RAM
7007
MSM51V18165F
DRAM
(TXT)
7012
M29W400BT
ERR 32

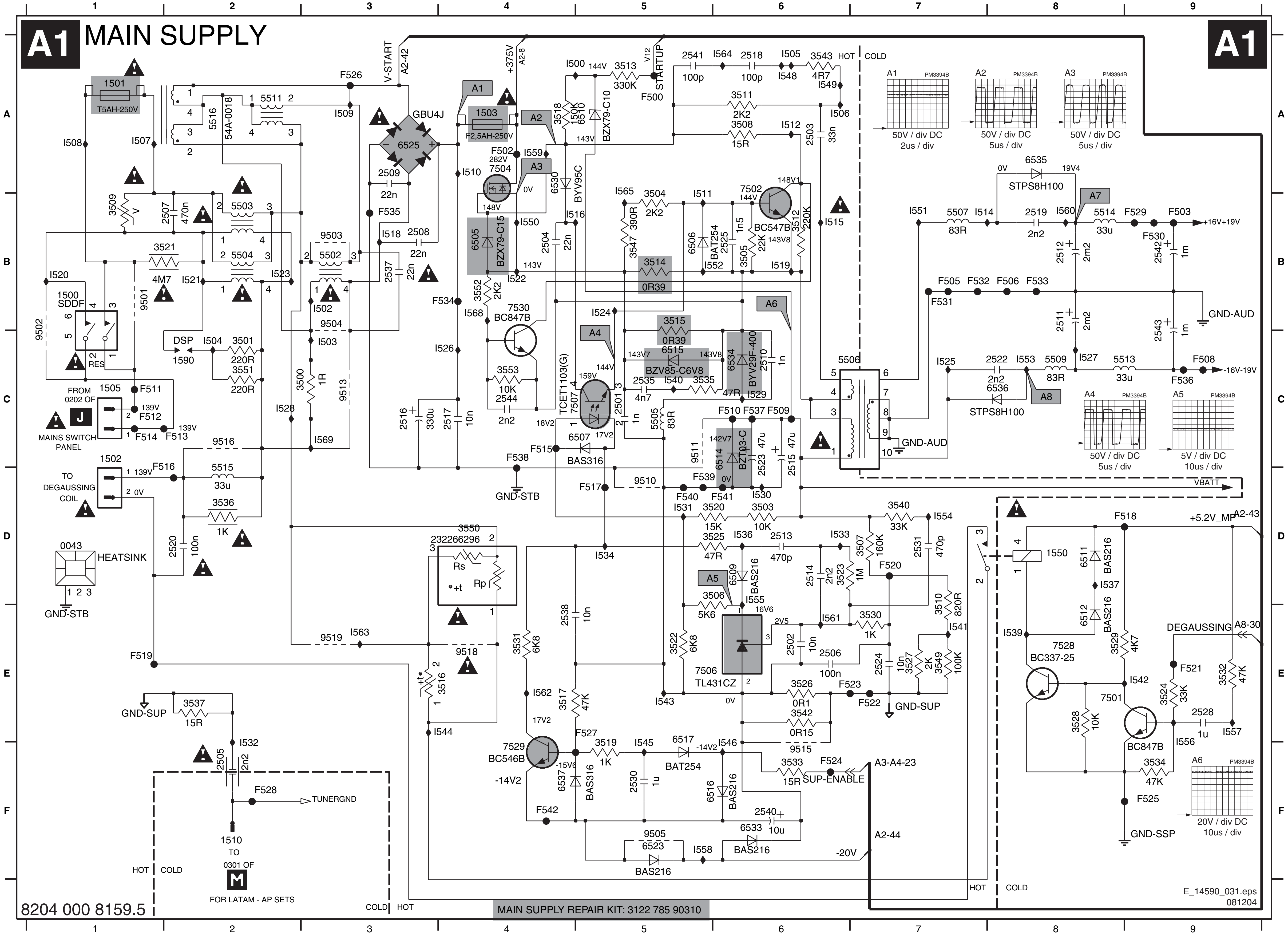
E_14590_029.eps
211004

Supply Lines Overview


SUPPLY LINES
J MAINS SWITCH PANEL (PARTLY)
A1 MAIN SUPPLY
A2 STAND-BY SUPPLY
MAIN SUPPLY
A3 LINE DEFLECTION
A4 FRAME DEFLECTION E/W DRIVE
A5 ROTATING CIRCUITRY
A6 AUDIO AMPLIFIER
A8 TUNER SIM CONN.
A9 RC5 RECEIVER
A10 FRONT
J MAINS SWITCH
PANEL ON CRT NECK
B1 SIM
B2 IF/IO
B4 HOP
B5 OTC
B5 ANTI-MOIRÉ
B10 HEADPHONE AMPLIFIER
B6 AUDIO DEMODULATOR
F CRT
I DAF
B3A PICNIC
B3B FALCONIC
B3C EAGLE
220V~
MAINS SWITCH
NOT IN PV02 MODEL
T6,3A
T5A
MAINS FILTER
DEG. COIL
HOT
COLD
ACTIVATING CIRCUIT
DEGAUSSING
OTC
+5.2V_MP
V-START
STARTUP
GBU4J
2.5A
+375V
GND-STB
CONTROL CIRCUIT
STP3NB60
VTUN
+11V_STBY
+11V
+8V6-SWITCH
+8V6
+5.2V
+5.2V_MP
+5V-SWITCH
+5V
CONTROL
STANDBY
-20V
HOT GROUND
STP5NB60FP
TCET1103
TL431CZP
VBATT ADJUSTMENT
+VBATT
GND-STB
GND-SUP
SUP-ENABLE
+16V+19V
AUDIO SUPPLY
GND-AUD
-16V-19V
TDA7052
125mA
5.2V_MP
+5V STANDBY
+8V6
TUNER
L78L05
MC78M05
+5VT
+8V
+8VS
+8VS2
+11V5
+5V2
+3V3
TDA7490
-VS
LINE DRIVE
LINE OUTPUT STAGE
LOT
EHT TO ANODE CRT
FOCUS 1
FOCUS 2
FILAMENT
+200V
+11D
FILAMENT PULSES
+13V-LOT
-15V-LOT
+141V
TDA8177
+8Vb
+8V_AUD
+8V_VDP
+5VA
+5V_CON
+5V_VDP
+3V3_SIM
+5V2_CON
+8V_CON
+5VCOM
+8VP
+5VS
TDA9320H HIP
TDA9181
F500mA
TDA9330H HOP
+3V3_INTOTC
SAA5801H OTC
+3V3_INTOTC
+5V_AUD
+5DA
+5DB
+8V-AUD
+8VA
+5VF
+8VC
MSP3452G AUDIO PROC.
+3V3_FBX
N.C.
+8V_+12V
SCAVEM
200V
FILAMENT CRT
11VDC
+2V5B
+3V3FA
+2V5FB
+3V3A
+3V3PR
+3V3_INT
+3V3FM
+3V3P
+3V3_E
+3V3FCD
+3V3FC1
+3V3FC2
+1V5_E
+1V5FCA
+1V5FCC
+2V5_E
+2V5FCA
+2V5FCD
E_14590_030.eps
211004

7. Circuit Diagrams and PWB Layouts

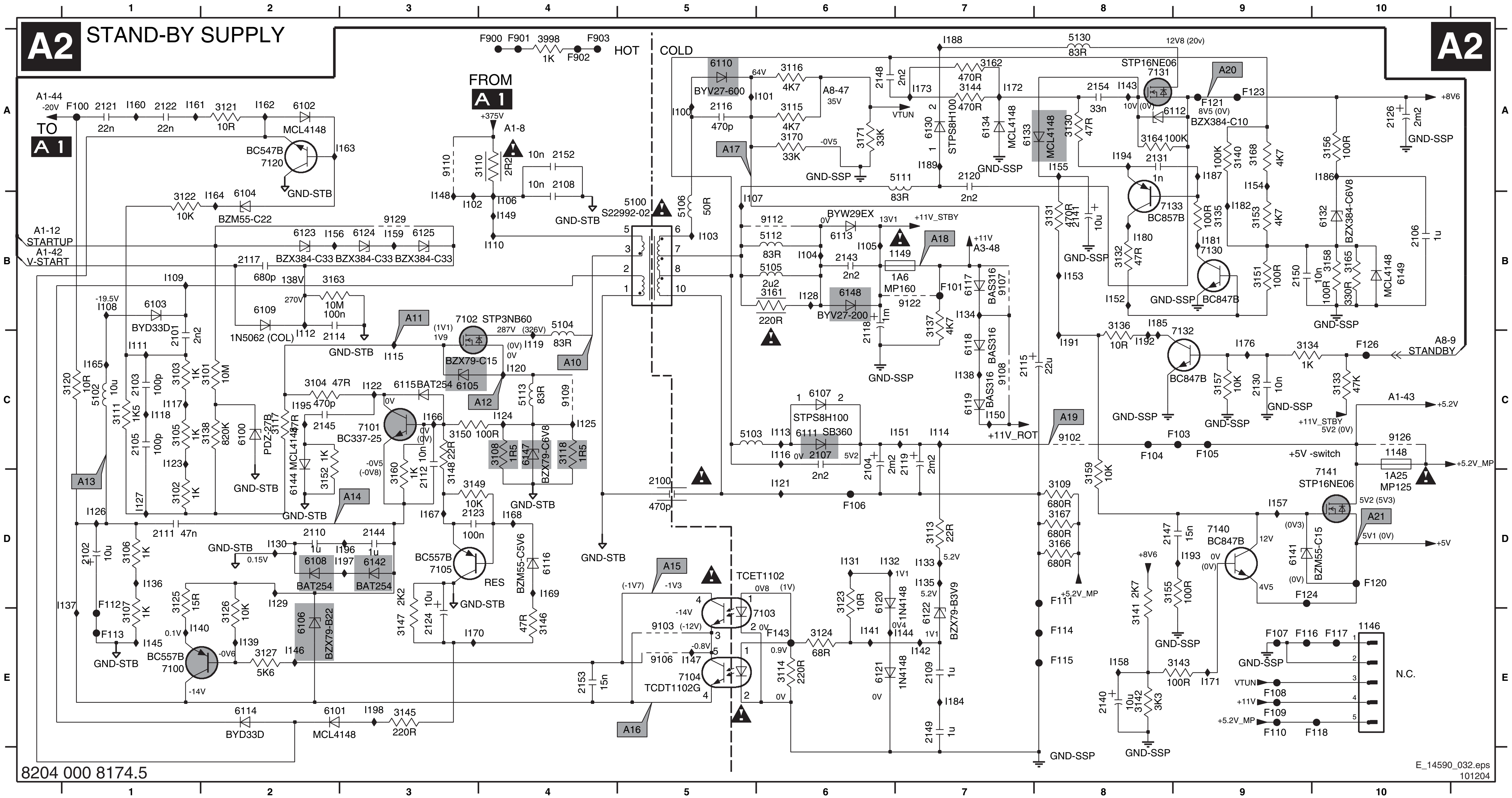
Large Signal Panel: Main Supply


A1 MAIN SUPPLY
1501 T5AH-250V
1503 F2,5AH-250V
6525 GBU4J
5511
5516 54A-0018
3509
2507 470n
5503
5504
5502
9503
3521 4M7
1500 SDDF
1505 FROM 0202 OF
J MAINS SWITCH PANEL
1502 TO DEGAUSSING COIL
0043 HEATSINK
GND-STB
DSP 1590
3501 220R
3551 220R
3500 1R
9504
9513
5515 33u
3536 1K
2520 100n
3550 232266296 Rs Rp +t
9516
9519
9518
3516
3537 15R
GND-SUP
2505 2n2
F528 TUNERGND
1510 TO 0301 OF
M FOR LATAM - AP SETS
HOT COLD
V-START
A2-42
+375V
A2-8
7504 282V 148V 0V
6505 BZX79-C15
6530 BYV95C
6510 BZX79-C10
3518 150K
3513 330K
V12 STARTUP
2509 22n
2508 22n
2537 22n
3552 2K2
7530 BC847B
3553 10K
2544 2n2
2516 330u
2517 10n
2504 22n
7507 TCET1103(G)
6507 BAS316
GND-STB
3547 390R
3504 2K2
3514 0R39
3515 0R39
6515 BZV85-C6V8
2535 4n7
3535 47R
6506 BAT254
2525 1n5
3505 22K
7502 BC547B
3512 220K
6534 BYV29F-400
2510 1n
5505 83R
9511
6514 BZT03-C
2523 47u
2515 47u
9510
2541 100p
2518 100p
3543 4R7
3511 2K2
3508 15R
2503 33n
5506
GND-AUD
VBATT
3520 15K
3503 10K
3525 47R
2513 470p
3540 33K
3507 160K
2531 470p
2514 2n2
3523 1M
6509 BAS216
3506 5K6
7506 TL431CZ
3522 6K8
2502 10n
2506 100n
3530 1K
3510 820R
2524 10n
3527 2K
3549 100K
3526 0R1
3542 0R15
GND-SUP
9515
3533 15R SUP-ENABLE
A3-A4-23
3531 6K8
2538 10n
3517 47K
7529 BC546B
6537 BAS316
3519 1K
6517 BAT254
2530 1u
6516 BAS216
2540 10u
6533 BAS216
9505
6523 BAS216
A2-44
-20V
MAIN SUPPLY REPAIR KIT: 3122 785 90310
A1 50V / div DC 2us / div
A2 50V / div DC 5us / div
A3 50V / div DC 5us / div
6535 STPS8H100
5507 83R
2519 2n2
5514 33u
+16V+19V
2512 2m2
2542 1m
2511 2m2
2543 1m
GND-AUD
2522 2n2
5509 83R
5513 33u
-16V-19V
6536 STPS8H100
A4 50V / div DC 5us / div
A5 5V / div DC 10us / div
1550
6511 BAS216
6512 BAS216
+5.2V_MP A2-43
DEGAUSSING A8-30
7528 BC337-25
3529 4K7
3528 10K
7501 BC847B
3524 33K
2528 1u
3532 47K
3534 47K
GND-SSP
A6 20V / div DC 10us / div
HOT COLD
E_14590_031.eps 081204
8204 000 8159.5

0043	D1
1500	B1
1501	A1
1502	C1
1503	A4
1505	C1
1510	F2
1550	D8
1590	C2
2501	C5
2502	E6
2503	A6
2504	B4
2505	F2
2506	E6
2507	B2
2508	B3
2509	A3
2510	C6
2511	B8
2512	B8
2513	D6
2514	D6
2515	C6
2516	C3
2517	C4
2518	A6
2519	B8
2520	D2
2522	C8
2523	C6
2524	E7
2525	B6
2528	E9
2530	F5
2531	D7
2535	C5
2537	B3
2538	E4
2540	F6
2541	A5
2542	B9
2543	C9
2544	C4
3500	C3
3501	C2
3503	D6
3504	B5
3505	B6
3506	D6
3507	D7
3508	A6
3509	B1
3510	D7
3511	A6
3512	B6
3513	A5
3514	B5
3515	B5
3516	E3
3517	E4
3518	A4
3519	F5
3520	D6
3521	B2
3522	E5
3523	D6
3524	E9
3525	D6
3526	E6
3527	E7
3528	E8
3529	E8
3530	E7
3531	E4
3532	E9
3533	F6
3534	F9
3535	C5
3536	D2
3537	E2
3540	D7
3542	E6
3543	A6
3547	B5
3549	E7
3550	D4
3551	C2
3552	B4
3553	C4
5502	B3
5503	B2
5504	B2
5505	C5
5506	C6
5507	B7
5509	C8
5511	A2
5513	C8
5514	B8
5515	D2
5516	A2
6505	B4
6506	B5
6507	C5
6509	D6
6510	A5
6511	D8
6512	E8
6514	C6
6515	C5
6516	F6
6517	E5
6523	F5
6525	A3
6530	A4
6533	F6
6534	C6
6535	A8
6536	C8
6537	F4
7501	E8
7502	A6
7504	A4
7506	E5
7507	C5
7528	E8
7529	F4
7530	B4
9501	B1
9502	B1
9503	B3
9504	B3
9505	F5
9510	D5
9511	C5
9513	C3
9515	F6
9516	C2
9518	E4
9519	E3
F500	A5
F502	A4
F503	B9
F505	B7
F506	B8
F508	C9
F509	C6
F510	C6
F511	C1
F512	C1
F513	C2
F514	C1
F515	C4
F516	D1
F517	D5
F518	D9
F519	E1
F520	D7
F521	E9
F522	E7
F523	E6
F524	F6
F525	F9
F526	A3
F527	E5
F528	F2
F529	B9
F530	B9
F531	B7
F532	B7
F533	B8
F534	B4
F535	B3
F536	C9
F537	C6
F538	C4
F539	D5
F540	D5
F541	D6
F542	F4
I500	A4
I502	B3
I503	C3
I504	C2
I505	A6
I506	A6
I507	A1
I508	A1
I509	A3
I510	A4
I511	B5
I512	A6
I514	B7
I515	B6
I516	B4
I518	B3
I519	B6
I520	B1
I521	B2
I522	B4
I523	B2
I524	B5
I525	C7
I526	C4
I527	C8
I528	C2
I529	C6
I530	D6
I531	D5
I532	F2
I533	D6
I534	D5
I536	D6
I537	D8
I539	E8
I540	C5
I541	E7
I542	E9
I543	E5
I544	E4
I545	F5
I546	F6
I548	A6
I549	A6
I550	B4
I551	B7
I552	B6
I553	C8
I554	D7
I555	D6
I556	E9
I557	E9
I558	F5
I559	A4
I560	B8
I561	E6
I562	E4
I563	E3
I564	A6
I565	A5
I568	B4
I569	C3

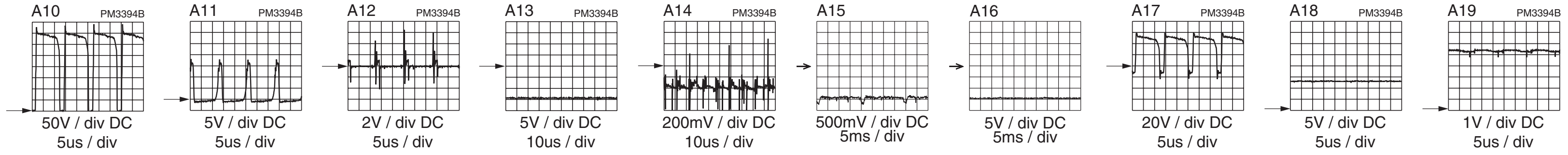
Large Signal Panel: Stand-by Supply

1146 E10
1148 C10
1149 B7
2100 D5
2101 C1
2102 D1
2103 C1
2104 C6
2105 C1
2106 B10
2107 C6
2108 A4
2109 E7
2110 D2
2111 D1
2112 D3
2114 C2
2115 C7
2116 A5
2117 B2
2118 C6
2119 C7
2120 A7
2121 A1
2122 A1
2123 D3
2124 E3
2126 A10
2130 C9
2131 A8
2140 E8
2141 B8
2143 B6
2144 D3
2145 C2
2147 D8
2148 A6
2149 E7
2150 B9
2152 A4
2153 E4
2154 A8
3101 C2
3102 D1
3103 C1
3104 C2
3105 C1
3106 D1
3107 E1
3108 C4
3109 D8
3110 A4
3111 C1
3113 D7
3114 E6
3115 A6
3116 A6
3117 C2
3118 C4
3120 C1
3121 A2
3122 B1
3123 D6
3124 E6
3125 D1
3126 E2
3127 E2
3130 A8
3131 B8
3132 B8
3133 C10
3134 C9
3135 B9
3136 B8
3137 B7
3138 C2
3140 A9
3141 E8
3142 E8
3143 E9
3144 A7
3145 E3
3146 E4
3147 E3
3148 D3
3149 D3
3150 C3
3151 B9
3152 D2
3153 B9
3155 D8
3156 A10
3157 C9
3158 B10
3159 D8
3160 D3
3161 B6
3162 A7
3163 B2
3164 A8
3165 B10
3166 D8
3167 D8
3168 A9
3170 A6
3171 A6
3998 A4
5100 B5
5102 C1
5103 C5
5104 B4
5105 B6
5106 B5
5111 A7
5112 B6
5113 C4
5130 A8
6100 C2
6101 E2
6102 A2
6103 B1
6104 B2
6105 C3
6106 E2
6107 C6
6108 D2
6109 B2
6110 A5
6111 C6
6112 A9
6113 B6
6114 E2
6115 C3
6116 D4
6117 B7
6118 C7
6119 C7
6120 D6
6121 E6
6122 E7
6123 B2
6124 B3
6125 B3
6130 A7
6132 B10
6133 A7
6134 A7
6141 D9
6142 D3
6144 D2
6147 C4
6148 B6
6149 B10
7100 E1
7101 C3
7102 B3
7103 E5
7104 E5
7105 D3
7120 A2
7130 B9
7131 A8
7132 C9
7133 B9
7140 D9
7141 D10
9102 C8
9103 E5
9106 E5
9107 B7
9108 C7
9109 C4
9110 A3
9112 B6
9122 B7
9126 C10
9129 B3
F100 A1
F101 B7
F103 C9
F104 C8
F105 C9
F106 D6
F107 E9
F108 E9
F109 E9
F110 E9
F111 D8
F112 D1
F113 E1
F114 E8
F115 E8
F116 E9
F117 E10
F118 E10
F120 D10
F121 A9
F123 A9
F124 D9
F126 C10
F143 E6
F900 A4
F901 A4
F902 A4
F903 A4
I100 A5
I101 A6
I102 B3
I103 B5
I104 B6
I105 B6
I106 B4
I107 B5
I108 B1
I109 B1
I110 B4
I111 C1
I112 C2
I113 C6
I114 C7
I115 C3
I116 C6
I117 C1
I118 C1
I119 C4
I120 C4
I121 D6
I122 C3
I123 C1
I124 C4
I125 C4
I126 D1
I127 D1
I128 B6
I129 D2
I130 D2
I131 D6
I132 D6
I133 D7
I134 B7
I135 D7
I136 D1
I137 D1
I138 C7
I139 E2
I140 E1
I141 E6
I142 E7
I143 A8
I144 E7
I145 E1
I146 E2
I147 E5
I148 B3
I149 B4
I150 C7
I151 C7
I152 B8
I153 B8
I154 A9
I155 A8
I156 B2
I157 D9
I158 E8
I159 B3
I160 A1
I161 A1
I162 A2
I163 A3
I164 B2
I165 C1
I166 C3
I167 D3
I168 D4
I169 D4
I170 E3
I171 E9
I172 A7
I173 A7
I176 C9
I180 B8
I181 B9
I182 B9
I184 E7
I185 B8
I186 A10
I187 A9
I188 A7
I189 A7
I191 C8
I192 C8
I193 D9
I194 A8
I195 C2
I196 D3
I197 D3
I198 E3


1
2
3
4
5
6
7
8
9
10
A
B
C
D
E
A2
STAND-BY SUPPLY
A2
F900 F901 3998 F903
1K F902
HOT
COLD
FROM
A1
+375V
A1-8
A1-44
-20V
F100 2121 I160 2122 I161 3121 I162 6102
22n 22n 10R
MCL4148
TO
A1
BC547B
7120
I163
GND-STB
3122 I164 6104
10K BZM55-C22
A1-12
STARTUP
A1-42
V-START
6123 I156 6124 I159 6125
9129
BZX384-C33 BZX384-C33 BZX384-C33
2117
680p
138V
3163
10M
100n
270V
6109
1N5062 (COL)
I112 2114
GND-STB
I109
-19.5V
I108
6103
BYD33D
2101
2n2
3101
10M
3103
1K
3105
1K
3138
820K
3102
1K
I111
I117
I118
I123
I165
3120
10R
5102
10u
3111
1K5
2103
100p
2105
100p
6100
GND-STB
PDZ-27B
3117
47R
6144 MCL4148
3152
1K
3104 47R
I195 470p
2145
I122
6115 BAT254
6105
BZX79-C15
A12
7101
BC337-25
0V
-0V5
(-0V8)
I166
3160
1K
2112
10n
3148
22R
3150 100R
I124
3108
1R5
6147
BZX79-C6V8
3118
1R5
I125
5113
83R
9109
A11
7102 STP3NB60
(1V1)
1V9
287V (326V)
I119
(0V)
0V
I120
I115
5104
83R
A10
A13
A14
I126
I127
2111 47n
GND-STB
2102
10u
3106
1K
I136
I137
F112
3107
1K
F113
GND-STB
I145
I130
0.15V
2110
1u
I196
2144
1u
6108
I197
6142
BAT254 BAT254
I129
3125
15R
3126
10K
I139
I140
0.1V
BC557B
7100
-0V6
-14V
3127
5K6
I146
6106
BZX79-B22
I167
3149
10K
2123
100n
I168
GND-STB
BC557B
7105
RES
GND-STB
2K2
3147
2124
10u
I170
BZM55-C5V6
6116
I169
47R
3146
6114
BYD33D
6101
MCL4148
I198
3145
220R
8204 000 8174.5
9110
3110
2R2
10n 2152
10n 2108
I148
I102
I106
I149
I110
GND-STB
5100
S22992-02
5106
50R
I103
5
3
2
1
6
7
8
10
2100
470p
GND-STB
A15
(-1V7) -1V3
TCET1102
0V8 (1V)
7103
-14V
9103 (-12V)
-0.8V
9106 I147
7104
TCDT1102G
A16
2153
15n
6110
BYV27-600
64V
3116
4K7
I101
I100
2116
470p
3115
4K7
3170
33K
A8-47
35V
-0V5
3171
33K
2148
2n2
I173
VTUN
A17
GND-SSP
I107
5111
83R
9112
5112
83R
5105
2u2
3161
220R
I104
I128
0V
BYW29EX
6113
13V1
+11V_STBY
I105
A18
2143
2n2
1149
1A6
MP160
6148
BYV27-200
2118
1m
F101
9122
3137
4K7
GND-SSP
+11V
A3-48
6117
BAS316
9107
I134
6118
BAS316
9108
I138
6119
BAS316
I150
+11V_ROT
5103
I113
6107
STPS8H100
6111 SB360
I116
0V
2107
2n2
5V2
2104
2m2
2119
2m2
I151
I114
I121
F106
3113
22R
5.2V
I133
I135
5.2V
6122
BZX79-B3V9
I131
3123
10R
I132
1V1
6120
1N4148
0V4
I141
I144
1V1
F143
3124
68R
0.9V
3114
220R
0V
6121
1N4148
0V
I142
2109
1u
I184
2149
1u
I188
5130
83R
12V8 (20v)
3162
470R
3144
470R
I172
6130
STPS8H100
I189
6134
MCL4148
6133
MCL4148
3130
47R
2120
2n2
2154
33n
I143
10V (0V)
STP16NE06
7131
A20
F121
8V5 (0V)
F123
+8V6
6112
BZX384-C10
3164 100K
2131
1n
I194
I155
7133
BC857B
I187
3140
100K
3168
4K7
I182
3135
100R
3153
4K7
I154
3131
470R
2141
10u
GND-SSP
3132
47R
I180
I181
7130
BC847B
I152
GND-SSP
3151
100R
I153
2126
2m2
GND-SSP
3156
100R
I186
6132
BZX384-C6V8
2106
1u
2150
10n
3158
100R
3165
330R
6149
MCL4148
GND-SSP
I191
3136
10R
I185
I192
7132
BC847B
I176
3134
1K
F126
A8-9
STANDBY
3157
10K
2130
10n
GND-SSP
GND-SSP
3133
47K
+11V_STBY
5V2 (0V)
A1-43
+5.2V
2115
22u
A19
9102
F103
F104
F105
+5V -switch
9126
1148
1A25
MP125
+5.2V_MP
3159
10K
7141
STP16NE06
5V2 (5V3)
A21
5V1 (0V)
+5V
3109
680R
3167
680R
3166
680R
I157
2147
15n
I193
7140
BC847B
(0V3)
12V
0V
(0V)
4V5
6141
BZM55-C15
(0V)
F120
F124
+8V6
3155
100R
GND-SSP
+5.2V_MP
F111
F114
F115
3141
2K7
I158
3143
100R
I171
2140
10u
3142
3K3
GND-SSP
GND-SSP
F107 F116 F117
1146
GND-SSP
VTUN
F108
+11V
F109
+5.2V_MP
F110 F118
N.C.
E_14590_032.eps
101204

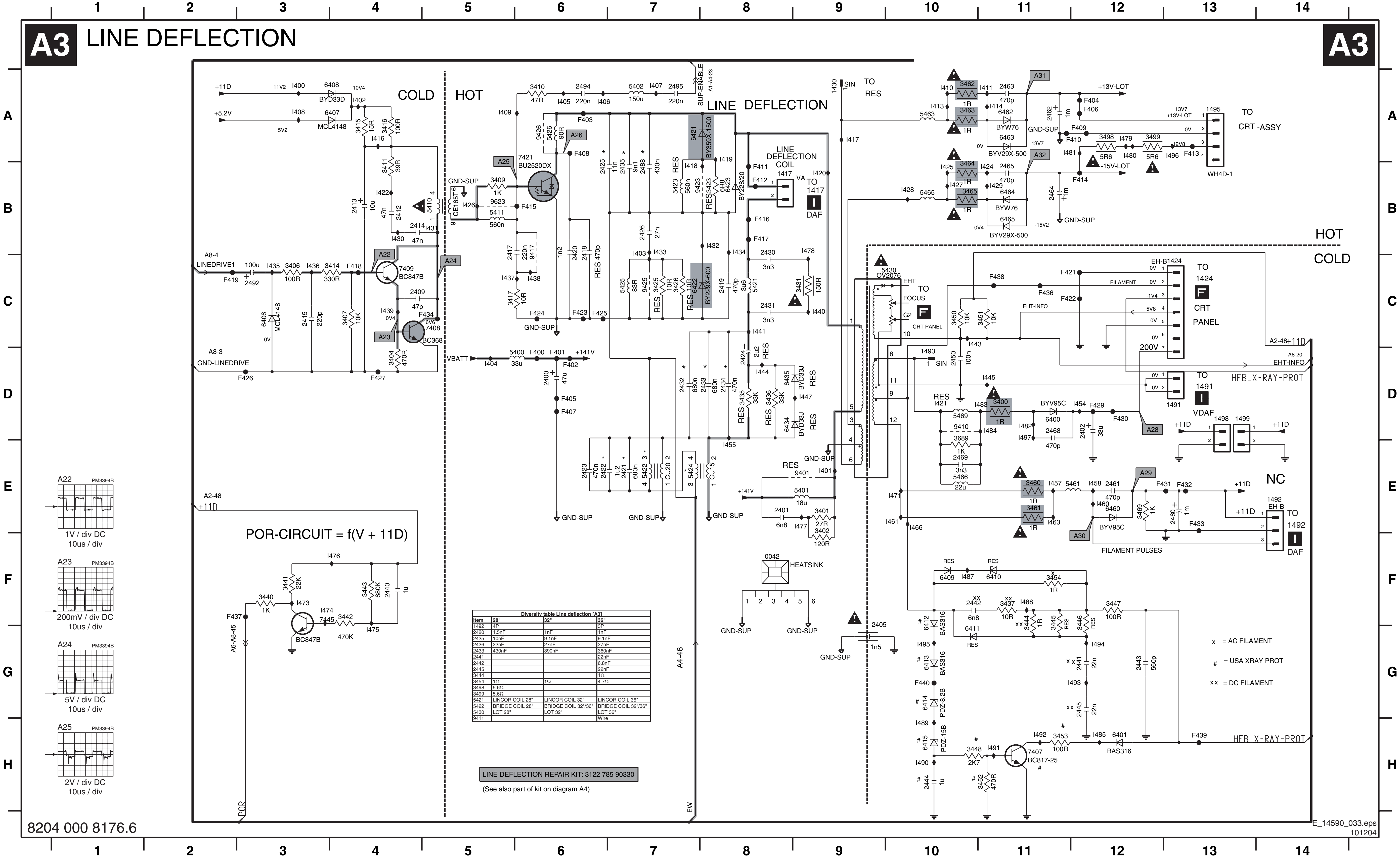
About DC-voltages measured:
NORMAL ..V.
STANDBY (..V.)

STANDBY SUPPLY REPAIR KIT: 3122 785 90460



Large Signal Panel: Line Deflection

0042 F8
1417 B8
1424 C13
1430 A9
1491 D13
1492 E14
1493 D10
1495 A13
1498 D13
1499 D13
2400 D6
2401 E8
2402 D12
2405 G9
2409 C4
2412 B4
2413 B4
2414 B4
2415 C3
2417 B5
2418 B6
2419 C8
2420 B6
2421 E7
2422 E6
2423 E6
2424 D8
2425 B6
2426 B7
2430 B8
2431 C8
2432 D7
2433 D8
2434 D8
2435 B7
2440 F4
2441 G12
2442 F10
2443 G12
2444 H10
2445 G12
2450 D10
2460 E13
2461 E12
2462 A11
2463 A11
2464 B11
2465 B11
2468 D11
2469 E10
2488 B7
2492 C3
2494 A6
2495 A7
3400 D11
3401 E9
3402 F9
3404 D4
3406 C3
3407 C4
3409 B5
3410 A6
3411 B4
3414 C4
3415 A4
3416 A4
3417 C5
3423 B8
3425 C7
3426 C7
3431 C9
3435 D8
3436 D8
3437 F11
3440 F3
3441 F3
3442 F4
3443 F4
3444 F11
3445 F11
3446 F12
3447 F12
3448 H10
3450 C10
3451 C11
3452 H11
3453 H11
3454 F11
3460 E11
3461 E11
3462 A10
3463 A10
3464 B10
3465 B10
3469 E12
3498 A12
3499 A12
3689 E10
5400 D6
5401 E9
5402 A7
5410 B5
5411 B5
5421 C8
5422 E7
5423 B7
5424 E7
5425 C7
5426 A6
5430 C10
5461 E12
5463 A10
5465 B10
5466 E10
5469 D10
6400 D11
6401 H12
6406 C3
6407 A4
6408 A4
6409 F10
6410 F11
6411 G10
6412 F10
6413 G10
6414 G10
6415 H10
6421 A7
6422 C7
6423 B8
6434 D8
6435 D8
6460 E12
6462 A11
6463 A11
6464 B11
6465 B11
7407 H11
7408 C5
7409 C4
7421 A6
7445 F3
9401 E9
9410 D10
9417 B6
9423 B7
9425 C7
9426 A6
9623 B5
F400 D6
F401 D6
F402 D6
F403 A6
F404 A12
F405 D6
F406 A12
F407 D6
F408 A6
F409 A12
F410 A12
F411 B8
F412 B8
F413 A13
F414 B12
F415 B6
F416 B8
F417 B8
F418 C4
F419 C2
F421 C11
F422 C11
F423 C6
F424 C6
F425 C6
F426 D3
F427 D4
F429 D12
F430 D12
F431 E13
F432 E13
F433 E13
F434 C5
F436 C11
F437 F2
F438 C11
F439 H13
F440 G10
I400 A3
I401 E9
I402 A4
I403 B7
I404 D5
I405 A6
I406 A6
I407 A7
I408 A3
I409 A5
I410 A10
I411 A11
I413 A10
I414 A11
I416 A4
I417 A9
I418 B7
I419 A8
I420 B9
I421 D10
I422 B4
I424 B11
I425 B10
I426 B5
I427 B10
I428 B10
I429 B11
I430 B4
I431 B5
I432 B8
I433 B7
I434 B8
I435 C3
I436 C3
I437 C5
I438 C6
I439 C4
I440 C9
I441 C8
I443 C10
I444 D8
I445 D11
I447 D9
I454 D12
I455 E8
I457 E11
I458 E12
I460 E12
I461 E10
I463 E11
I466 E10
I471 E10
I473 F3
I474 F3
I475 G4
I476 F4
I477 E9
I478 B9
I479 A12
I480 A12
I481 A11
I482 D11
I483 D11
I484 D11
I485 H12
I487 F10
I488 F11
I489 H10
I490 H10
I491 H11
I492 H11
I493 G12
I494 G12
I495 G10
I496 A13
I497 D11


A3
LINE DEFLECTION
A3
COLD
HOT
LINE DEFLECTION
HOT
COLD
+11D
+5.2V
BYD33D
MCL4148
7421
BU2520DX
7409
BC847B
7408
BC368
A8-4
LINEDRIVE1
A8-3
GND-LINEDRIVE
GND-SUP
VBATT
+141V
SUP-ENABLE
LINE DEFLECTION COIL
TO 1417 DAF
TO RES
TO CRT -ASSY
+13V-LOT
-15V-LOT
BYW76
BYV29X-500
WH4D-1
EHT
TO FOCUS
G2
CRT PANEL
TO 1424 CRT PANEL
FILAMENT
EHT-INFO
200V
TO 1491 VDAF
HFB_X-RAY-PROT
A2-48
A8-20
NC
TO 1492 DAF
FILAMENT PULSES
HEATSINK
POR-CIRCUIT = f(V + 11D)
BC847B
A6-A8-45
A4-46
POR
EW
BC817-25
BAS316
PDZ-8.2B
PDZ-15B
x = AC FILAMENT
# = USA XRAY PROT
xx = DC FILAMENT
A22
1V / div DC
10us / div
A23
200mV / div DC
10us / div
A24
5V / div DC
10us / div
A25
2V / div DC
10us / div
PM3394B
8204 000 8176.6
E_14590_033.eps
101204

Diversity table Line deflection [A3]			
Item	**28"**	**32"**	**36"**
1492	4P		3P
2420	1.5nF	1nF	1nF
2425	10nF	9.1nF	9.1nF
2426	22nF	27nF	27nF
2433	430nF	390nF	360nF
2441			22nF
2442			6.8nF
2445			22nF
3444			1Ω
3454	1Ω	1Ω	4.7Ω
3498	5.6Ω		
3499	5.6Ω		
5421	LINCOR COIL 28"	LINCOR COIL 32"	LINCOR COIL 36"
5422	BRIDGE COIL 28"	BRIDGE COIL 32"/36"	BRIDGE COIL 32"/36"
5430	LOT 28"	LOT 32"	LOT 36"
9411			Wire

LINE DEFLECTION REPAIR KIT: 3122 785 90330

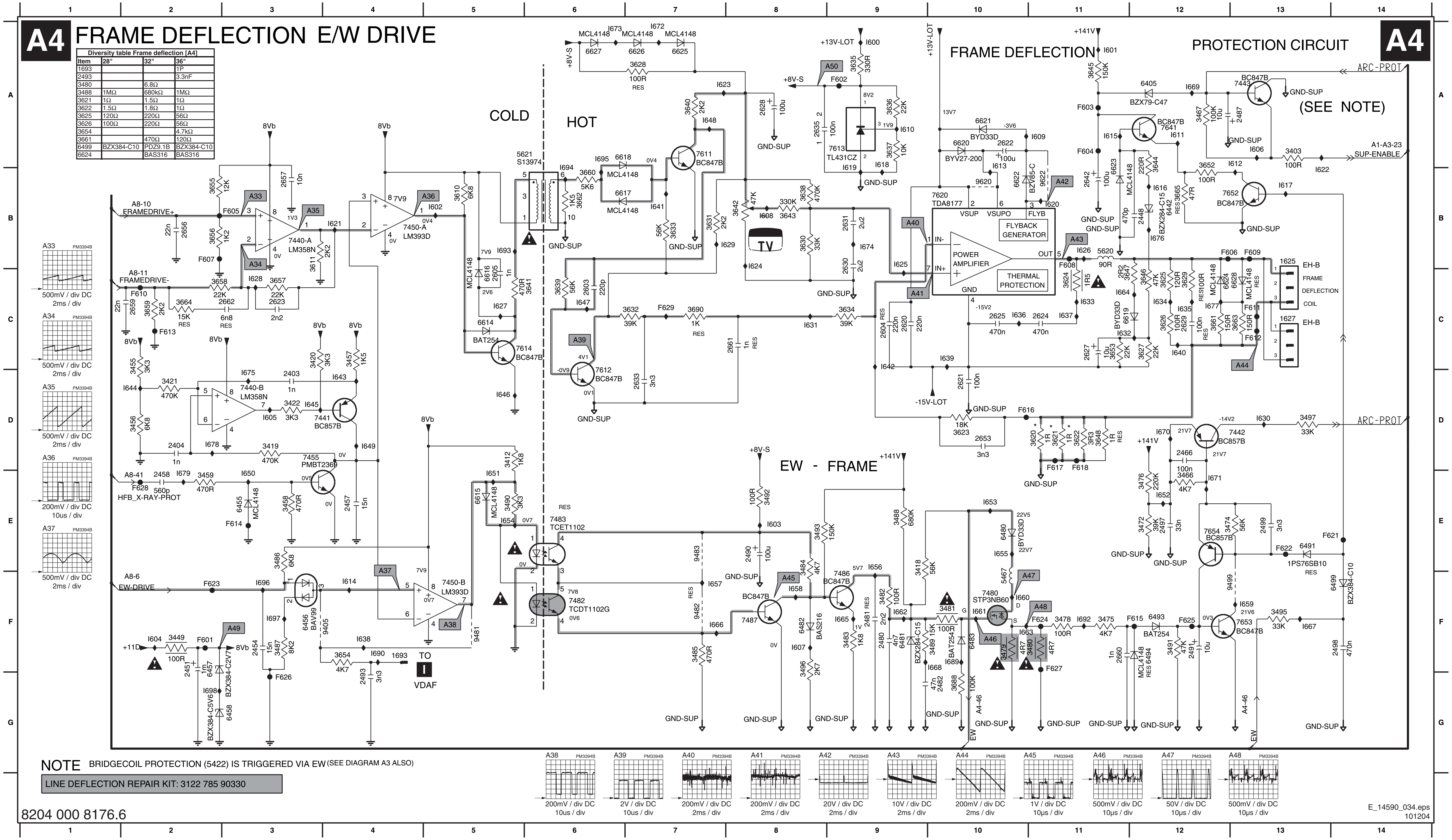
(See also part of kit on diagram A4)

Large Signal Panel: Frame Deflection E/W Drive

1625 B13	2481 F9	2620 C9	2635 A8	3419 D3	3472 E12	3486 E3	3611 B3	3631 B7	3643 B8	3658 C2	5621 A5	6493 F12	6623 A11	7450-B F5	7641 A12	F602 A9	F614 E3	F628 E2	I610 A9	I622 B13	I634 C12	I646 D5	I658 F8	I670 D12	I692 F11
1627 C13	2482 G10	2621 D10	2642 B11	3420 C3	3474 E13	3487 F3	3620 D11	3632 C7	3644 A12	3659 C2	6405 A12	6494 F12	6624 C12	7455 D3	7652 B13	F603 A11	F615 F12	F629 C7	I611 A12	I623 A7	I635 C12	I647 C6	I659 F13	I671 E12	I693 B5
1693 F4	2487 A13	2622 A10	2653 D10	3421 D2	3475 F11	3488 E9	3621 D11	3633 B7	3645 A11	3660 B6	6442 B12	6499 F14	6625 A7	7480 F10	7653 F13	F604 A11	F616 D10	I600 A9	I612 A13	I624 B8	I636 C10	I648 A7	I660 F10	I672 A7	I694 A6
2403 D3	2490 E8	2623 C3	2656 B2	3422 D3	3476 E12	3489 F10	3622 D11	3634 C9	3646 C12	3661 C12	6455 E3	6614 C5	6626 A7	7482 F6	7654 E12	F605 B3	F617 D11	I601 A11	I613 A10	I625 B9	I637 C11	I649 D4	I661 F10	I673 A6	I695 A6
2404 D2	2491 F12	2624 C11	2657 B3	3449 F2	3478 F11	3490 E5	3623 D10	3635 A9	3647 C12	3662 B6	6456 F3	6615 E5	6627 A6	7483 E6	9405 F4	F606 B12	F618 D11	I602 B5	I614 F4	I626 B11	I638 F4	I650 E3	I662 F9	I674 B9	I696 F3
2448 B12	2493 G4	2625 C10	2659 C2	3455 C2	3479 F10	3491 F12	3624 C11	3636 A9	3648 D11	3663 C13	6457 F2	6616 C5	6628 C13	7486 F9	9481 F5	F607 B2	F621 E13	I603 E8	I615 A11	I627 C5	I639 C10	I651 E5	I663 F10	I675 D3	I697 F3
2451 F2	2497 E12	2627 C11	2660 F11	3456 D2	3480 F11	3492 E8	3625 C12	3637 A9	3652 A12	3664 C2	6458 G3	6617 B6	7440-A B3	7487 F8	9482 F7	F608 B11	F622 E13	I604 F2	I616 B12	I628 C3	I640 C12	I652 E12	I664 C11	I676 B12	I698 G2
2454 F3	2498 F14	2628 A8	2661 C8	3457 C4	3481 F10	3493 E8	3626 C12	3638 B8	3653 C11	3665 B12	6480 E10	6618 A6	7440-B D3	7611 A7	9483 E7	F609 B13	F623 F2	I605 D3	I617 B13	I629 B8	I641 B7	I653 E10	I665 F9	I677 C12	
2457 E4	2499 E13	2629 C12	2662 C3	3458 E3	3482 F9	3495 F13	3627 C12	3639 C6	3654 F4	3688 G10	6481 F9	6619 C11	7441 D3	7612 D6	9499 F13	F610 C2	F624 F11	I606 A13	I618 A9	I630 D13	I642 C9	I654 E5	I666 F7	I678 D2	
2458 E2	2603 C6	2630 B9	3403 A13	3459 E2	3483 F9	3496 F8	3628 A7	3640 A7	3655 B2	3690 C7	6482 F8	6620 A10	7442 D13	7613 A9	9620 B10	F611 C13	F625 F12	I607 F8	I619 A9	I631 C8	I643 D4	I655 E10	I667 F13	I679 E2	
2466 D12	2604 C9	2631 B9	3412 D5	3466 E12	3484 E8	3497 D13	3629 C12	3641 C6	3656 B2	5467 F10	6483 F10	6621 A10	7443 A13	7614 C5	9622 B11	F612 C13	F626 G3	I608 B8	I620 B11	I632 C11	I644 D2	I656 E9	I668 F10	I689 F10	
2480 F9	2605 C5	2633 D7	3418 E9	3467 A12	3485 F7	3610 B5	3630 B8	3642 B8	3657 C3	5620 B11	6491 E13	6622 B10	7450-A B4	7620 B10	F601 F2	F613 C2	F627 F11	I609 A11	I621 B4	I633 C11	I645 D3	I657 F7	I669 A12	I690 F4	

A4 FRAME DEFLECTION E/W DRIVE

Diversity table Frame deflection [A4]			
Item	28"	32"	36"
1693			1P
2493			3.3nF
3480		6.8Ω	
3488	1MΩ	680kΩ	1MΩ
3621	1Ω	1.5Ω	1Ω
3622	1.5Ω	1.8Ω	1Ω
3625	120Ω	220Ω	56Ω
3626	100Ω	220Ω	56Ω
3654			4.7kΩ
3661		470Ω	120Ω
6499	BZX384-C10	PDZ9.1B	BZX384-C10
6624		BAS316	BAS316



1
2
3
4
5
6
7
8
9
10
11
12
13
14
A
B
C
D
E
F
G
A4
COLD
HOT
FRAME DEFLECTION
PROTECTION CIRCUIT
(SEE NOTE)
EW - FRAME
A8-10 FRAMEDRIVE+
A8-11 FRAMEDRIVE-
A8-41 HFB_X-RAY-PROT
A8-6 EW-DRIVE
A1-A3-23 SUP-ENABLE
ARC-PROT
7440-A LM358N
7440-B LM358N
7450-A LM393D
7450-B LM393D
7441 BC857B
7455 PMBT2369
7611 BC847B
7612 BC847B
7613 TL431CZ
7614 BC847B
7620 TDA8177
POWER AMPLIFIER
FLYBACK GENERATOR
THERMAL PROTECTION
VSUP
VSUPO
FLYB
IN-
IN+
OUT
GND
7641 BC847B
7443 BC847B
7652 BC847B
7442 BC857B
7654 BC857B
7653 BC847B
7483 TCET1102
7482 TCDT1102G
7486 BC847B
7487 BC847B
7480 STP3NB60
5621 S13974
5620 90R
1625 EH-B FRAME DEFLECTION COIL
1627 EH-B
+8V-S
+13V-LOT
+141V
-15V-LOT
+11V
8Vb
GND-SUP
TV
TO VDAF
A33
A34
A35
A36
A37
A38
A39
A40
A41
A42
A43
A44
A45
A46
A47
A48
A49
A50
500mV / div DC 2ms / div
200mV / div DC 10us / div
200mV / div DC 10us / div
2V / div DC 10us / div
200mV / div DC 2ms / div
20V / div DC 2ms / div
10V / div DC 2ms / div
1V / div DC 10µs / div
500mV / div DC 10µs / div
50V / div DC 10µs / div
500mV / div DC 10µs / div

NOTE BRIDGECOIL PROTECTION (5422) IS TRIGGERED VIA EW (SEE DIAGRAM A3 ALSO)

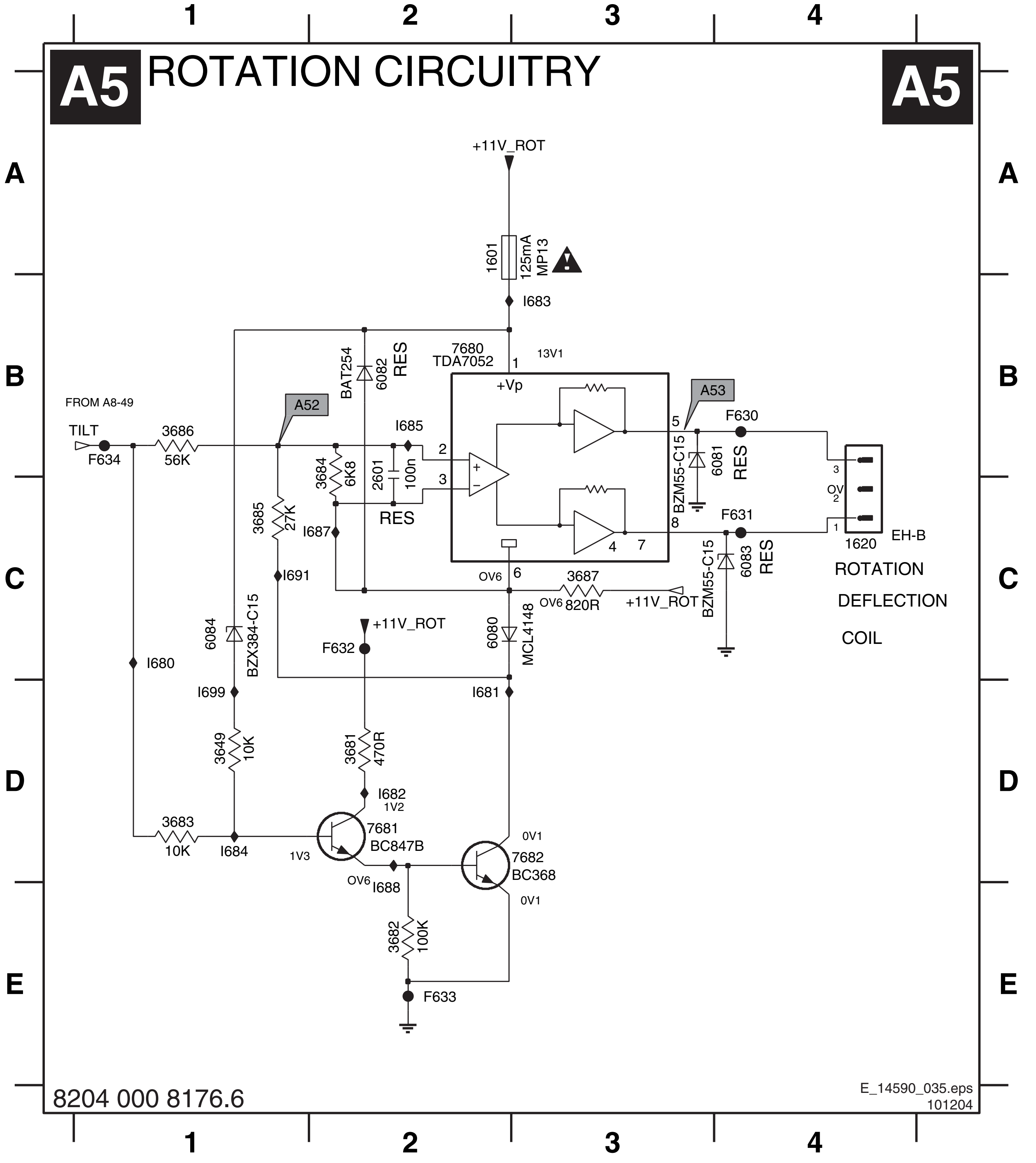
LINE DEFLECTION REPAIR KIT: 3122 785 90330

8204 000 8176.6

E_14590_034.eps
101204

Large Signal Panel: Rotation Circuitry

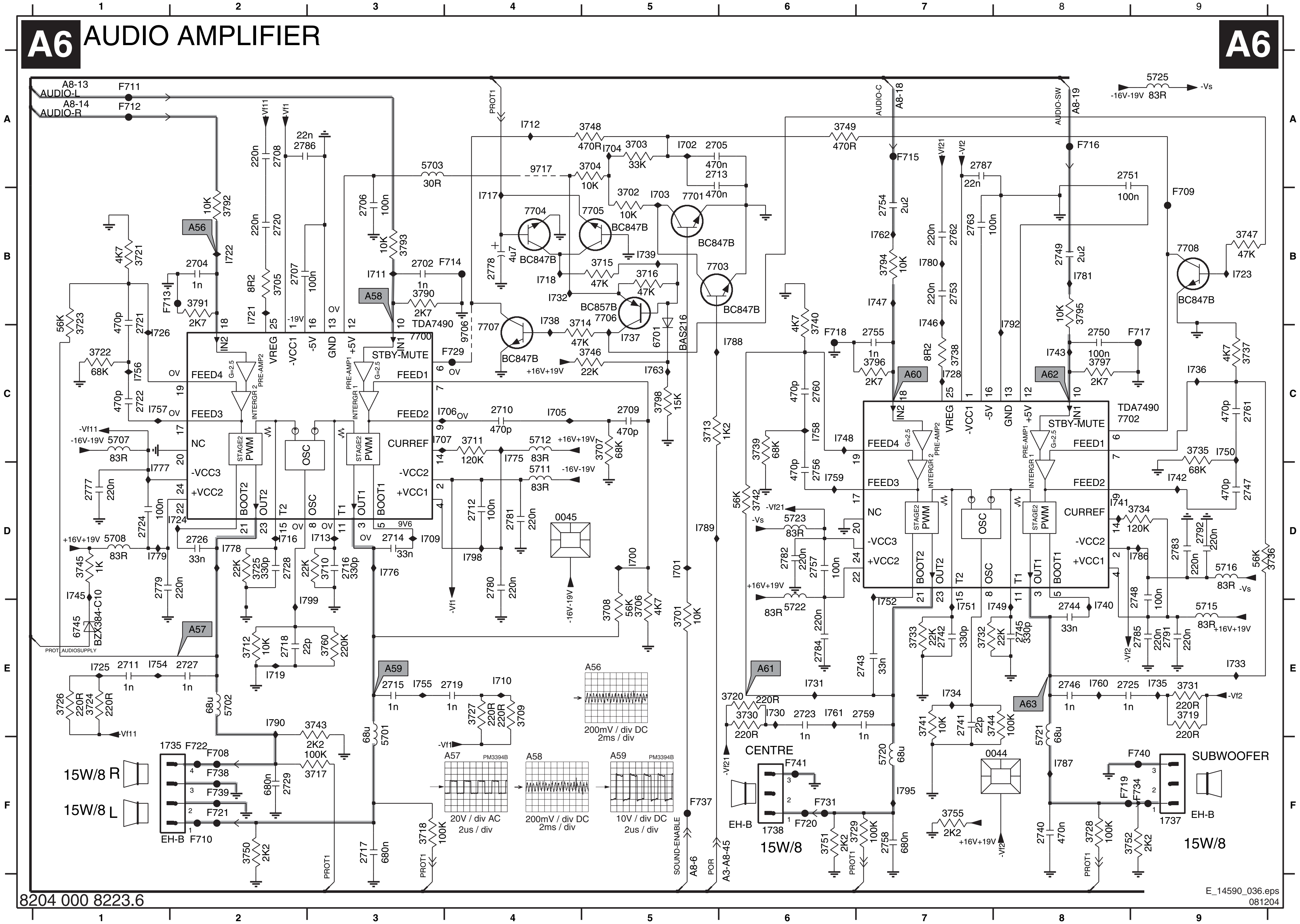
1601	A2
1620	C4
2601	B2
3649	D1
3681	D2
3682	E2
3683	D1
3684	B2
3685	C1
3686	B1
3687	C3
6080	C2
6081	B3
6082	B2
6083	C4
6084	C1
7680	B2
7681	D2
7682	D3
F630	B4
F631	C4
F632	C2
F633	E2
F634	B1
I680	C1
I681	D2
I682	D2
I683	B3
I684	D1
I685	B2
I687	C2
I688	E2
I691	C1
I699	D1


A5 ROTATION CIRCUITRY A5
1 2 3 4
A B C D E
+11V_ROT
1601
125mA
MP13
I683
7680
TDA7052
13V1
+Vp
BAT254
6082
RES
FROM A8-49
TILT
F634
3686
56K
A52
I685
3684
6K8
2601
100n
RES
A53
F630
6081
RES
BZM55-C15
F631
6083
RES
BZM55-C15
1620
EH-B
ROTATION
DEFLECTION
COIL
0V
3685
27K
I687
I691
0V6
3687
820R
+11V_ROT
6080
MCL4148
+11V_ROT
F632
6084
BZX384-C15
I680
I699
I681
3649
10K
3681
470R
I682
1V2
7681
BC847B
3683
10K
I684
1V3
0V6
I688
7682
BC368
0V1
3682
100K
F633
8204 000 8176.6
E_14590_035.eps
101204

Personal Notes:

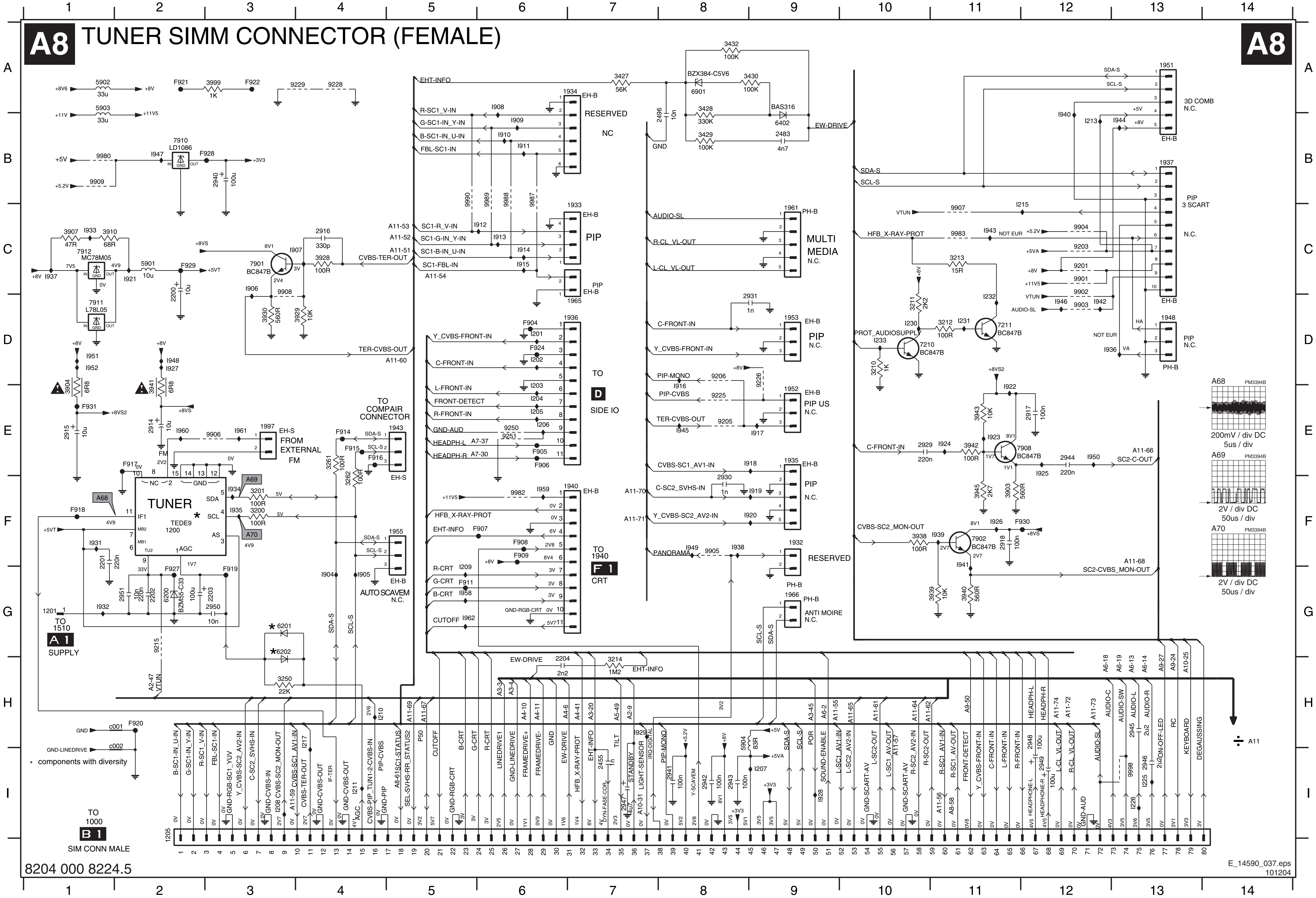
E_06532_012.eps
131004

Large Signal Panel: Audio Amplifier


A6
AUDIO AMPLIFIER
A6
A8-13
AUDIO-L
F711
A8-14
AUDIO-R
F712
A56
A57
A58
A59
A60
A61
A62
A63
TDA7490
7700
TDA7490
7702
IN2
VREG
-VCC1
-5V
GND
+5V
STBY-MUTE
IN1
FEED4
FEED3
FEED1
FEED2
NC
-VCC3
+VCC2
-VCC2
+VCC1
CURREF
PWM
STAGE2
OSC
BOOT2
OUT2
T2
T1
OUT1
BOOT1
PRE-AMP1
PRE-AMP2
INTERGR 1
INTERGR 2
G=2.5
7701
7703
7704
7705
7707
7708
BC847B
7706
BC857B
6701
BAS216
6745
BZX384-C10
PROT1
AUDIO-C
A8-18
AUDIO-SW
A8-19
5725
83R
-16V-19V
-Vs
+16V+19V
-Vf1
-Vf2
-Vf11
-Vf21
0045
0044
A56
200mV / div DC
2ms / div
A57
20V / div AC
2us / div
A58
200mV / div DC
2ms / div
A59
10V / div DC
2us / div
PM3394B
15W/8 R
15W/8 L
1735
EH-B
CENTRE
1738
15W/8
SUBWOOFER
1737
15W/8
SOUND-ENABLE
A8-6
POR
A3-A8-45
PROT AUDIOSUPPLY
8204 000 8223.6
E_14590_036.eps
081204
1 2 3 4 5 6 7 8 9
A B C D E F

0044 F7
0045 E5
1735 F2
1737 F9
1738 F6
2702 B3
2704 B2
2705 A5
2706 B3
2707 B2
2708 A2
2709 C5
2710 C4
2711 E1
2712 D4
2713 A5
2714 D3
2715 E3
2716 D3
2717 F3
2718 E2
2719 E4
2720 B2
2721 B1
2722 C1
2723 E6
2724 D1
2725 E8
2726 D2
2727 E2
2728 D2
2729 F2
2740 F8
2741 E7
2742 E7
2743 E7
2744 E8
2745 E8
2746 E8
2747 D9
2748 D8
2749 B8
2750 C8
2751 A8
2753 B7
2754 B7
2755 C7
2756 D6
2757 D6
2758 F7
2759 E7
2760 C6
2761 C9
2762 B7
2763 B7
2777 D1
2778 B4
2779 D1
2780 D4
2781 D4
2782 D6
2783 D9
2784 E6
2785 E9
2786 A2
2787 A7
2791 E9
2792 D9
3701 E5
3702 B5
3703 A5
3704 A5
3705 B2
3706 E5
3707 C5
3708 E5
3709 E4
3710 D3
3711 C4
3712 E2
3713 C5
3714 C4
3715 B5
3716 B5
3717 F3
3718 F3
3719 E9
3720 E6
3721 B1
3722 C1
3723 B1
3724 E1
3725 D2
3726 E1
3727 E4
3728 F8
3729 F7
3730 E6
3731 E9
3732 E7
3733 E7
3734 D9
3735 C9
3736 D9
3737 C9
3738 C7
3739 C6
3740 B6
3741 E7
3742 D6
3743 E3
3744 E8
3745 D1
3746 C5
3747 B9
3748 A5
3749 A6
3750 F2
3751 F6
3752 F9
3755 F7
3760 E3
3790 B3
3791 B2
3792 B2
3793 B3
3794 B7
3795 B8
3796 C7
3797 C8
3798 C5
5701 E3
5702 E2
5703 A3
5707 C1
5708 D1
5711 D4
5712 C4
5715 E9
5716 D9
5720 F7
5721 E8
5722 E6
5723 D6
5725 A9
6701 C5
6745 E1
7700 C3
7701 B5
7702 C8
7703 B5
7704 B4
7705 B5
7706 B5
7707 C4
7708 B9
9706 C4
9717 A4
F708 F2
F709 B9
F710 F2
F711 A1
F712 A1
F713 B2
F714 B4
F715 A7
F716 A8
F717 C9
F718 C6
F719 F8
F720 F6
F721 F2
F722 F2
F729 C4
F731 F6
F734 F9
F737 F5
F738 F2
F739 F2
F740 F9
F741 F6
I700 D5
I701 D5
I702 A5
I703 B5
I704 A5
I705 C4
I706 C4
I707 C3
I709 D3
I710 E4
I711 B3
I712 A4
I713 D3
I716 D2
I717 B4
I718 B4
I719 E2
I721 B2
I722 B2
I723 B9
I724 D2
I725 E1
I726 C1
I728 C7
I730 E6
I731 E6
I732 B4
I733 E9
I734 E7
I735 E9
I736 C9
I737 C5
I738 B4
I739 B5
I740 E8
I741 D8
I742 D9
I743 C8
I745 D1
I746 B7
I747 B7
I748 C6
I749 E8
I750 C9
I751 E7
I752 E7
I754 E1
I755 E3
I756 C1
I757 C1
I758 C6
I759 D6
I760 E8
I761 E6
I762 B7
I763 C5
I775 C4
I776 D3
I777 D1
I778 D2
I779 D1
I780 B7
I781 B8
I786 D9
I787 F8
I788 C6
I789 D5
I790 E2
I792 B8
I795 F7
I798 D4
I799 E3

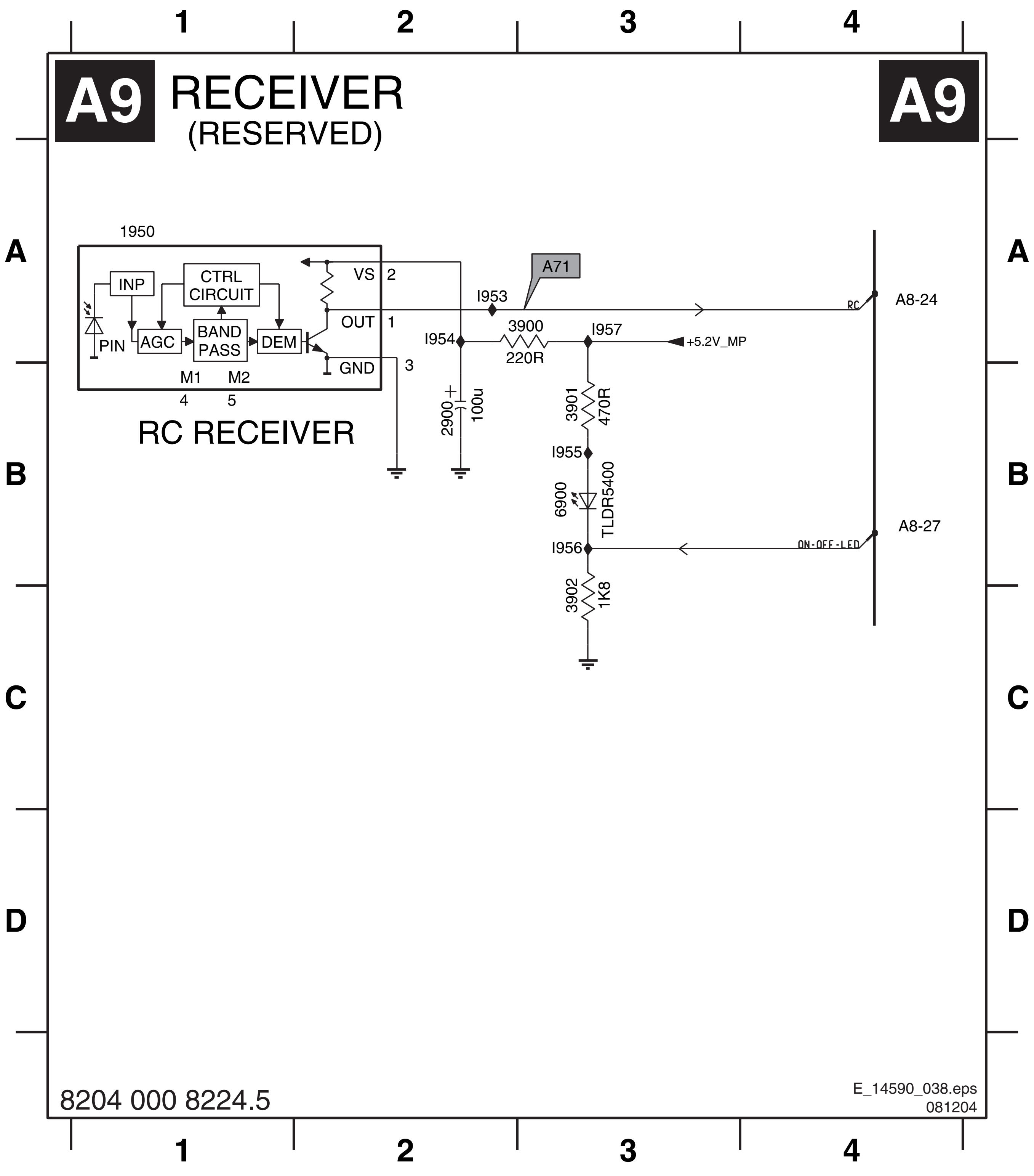
Large Signal Panel: Tuner SIMM Connector (Female)


A8
TUNER SIMM CONNECTOR (FEMALE)
A8
TUNER
TEDE9
1200
7910
LD1086
7911
L78L05
7912
MC78M05
7901
BC847B
7902
BC847B
7908
BC847B
7210
BC847B
7211
BC847B
1934
RESERVED
NC
1933
PIP
1961
MULTI
MEDIA
N.C.
1953
PIP
N.C.
1952
PIP US
N.C.
1935
PIP
N.C.
1932
RESERVED
1966
ANTI MOIRE
N.C.
1951
3D COMB
N.C.
1937
PIP
3 SCART
N.C.
1948
PIP
N.C.
1936
TO
D
SIDE IO
1940
TO
1940
F 1
CRT
1997
FROM
EXTERNAL
FM
1943
TO
COMPAIR
CONNECTOR
EH-S
1955
AUTO SCAVEM
N.C.
TO
1510
A 1
SUPPLY
TO
1000
B 1
SIM CONN MALE
1205
EHT-INFO
EW-DRIVE
A11
* components with diversity
A68
200mV / div DC
5us / div
A69
2V / div DC
50us / div
A70
2V / div DC
50us / div
PM3394B
8204 000 8224.5
E_14590_037.eps
101204

1200	F2	9909	B1
1201	G1	9980	B1
1205	I2	9982	F6
1932	F9	9983	C11
1933	B6	9987	B6
1934	A6	9988	B6
1935	E9	9989	B6
1936	D6	9990	B5
1937	B13	9998	I13
1940	F6	F904	D6
1943	E5	F905	E6
1948	D13	F906	E6
1951	A13	F907	F6
1952	E9	F908	F6
1953	D9	F909	F6
1955	F5	F911	G5
1961	C9	F914	E4
1965	D6	F915	E4
1966	G9	F916	E4
1997	E3	F917	E2
2200	D2	F918	F1
2201	F1	F919	G3
2202	G2	F920	H2
2203	G3	F921	A2
2455	I7	F922	A3
2483	B9	F924	D6
2496	B8	F927	G2
2914	E2	F928	B3
2915	E1	F929	C2
2916	C4	F930	F12
2917	E12	F931	E1
2918	F11	I201	D6
2929	E10	I202	D6
2930	F8	I203	E6
2931	D9	I204	E6
2940	B3	I205	E6
2941	I8	I206	E6
2942	I8	I207	I9
2943	I8	I208	I3
2944	E12	I209	G5
2945	H13	I210	H4
2946	I13	I211	I4
2947	I7	I213	B12
2948	H12	I215	C12
2949	I12	I217	H4
2950	G3	I225	I13
2951	G2	I226	I13
3200	F3	I230	D10
3201	F3	I231	D11
3210	D10	I232	D11
3211	D10	I233	D10
3212	D11	I904	G4
3213	C11	I905	G4
3250	H3	I906	C3
3261	E4	I907	C4
3262	F4	I908	A6
3427	A7	I909	B6
3428	A8	I910	B6
3429	B8	I911	B6
3430	A9	I912	C6
3432	A8	I913	C6
3903	F11	I914	C6
3904	E1	I915	C6
3907	C1	I916	E8
3910	C1	I917	E9
3928	C4	I918	E9
3929	D4	I919	F9
3930	D3	I920	F9
3938	F10	I921	C2
3939	G11	I922	E11
3940	G11	I923	E11
3941	E2	I924	E11
3942	E11	I925	E12
3943	E11	I926	F11
3945	F11	I927	D2
3999	A3	I928	I9
5901	C2	I929	H7
5902	A1	I931	F1
5903	A1	I932	G1
5904	H8	I933	C1
6200	G2	I934	F3
6201	G3	I935	F3
6202	G3	I936	D12
6402	B9	I937	C1
6901	A8	I938	F8
7210	D10	I939	F11
7211	D11	I940	B12
7901	C3	I941	F11
7902	F11	I942	D12
7908	E11	I943	C11
7910	B2	I944	B13
7911	D1	I945	E8
7912	C1	I946	D12
9201	C12	I947	B2
9203	C12	I948	D2
9205	E8	I949	F8
9206	D8	I950	E12
9215	G2	I951	D1
9225	E8	I952	D1
9226	D9	I958	G5
9228	A4	I959	F6
9229	A4	I960	E2
9250	E6	I961	E3
9251	E6	I962	G5
9901	C12	c001	H2
9902	C12	c002	I2
9903	D12		
9904	C12		
9905	F8		
9906	E3		
9907	C11		
9908	C3		

Large Signal Panel: Receiver

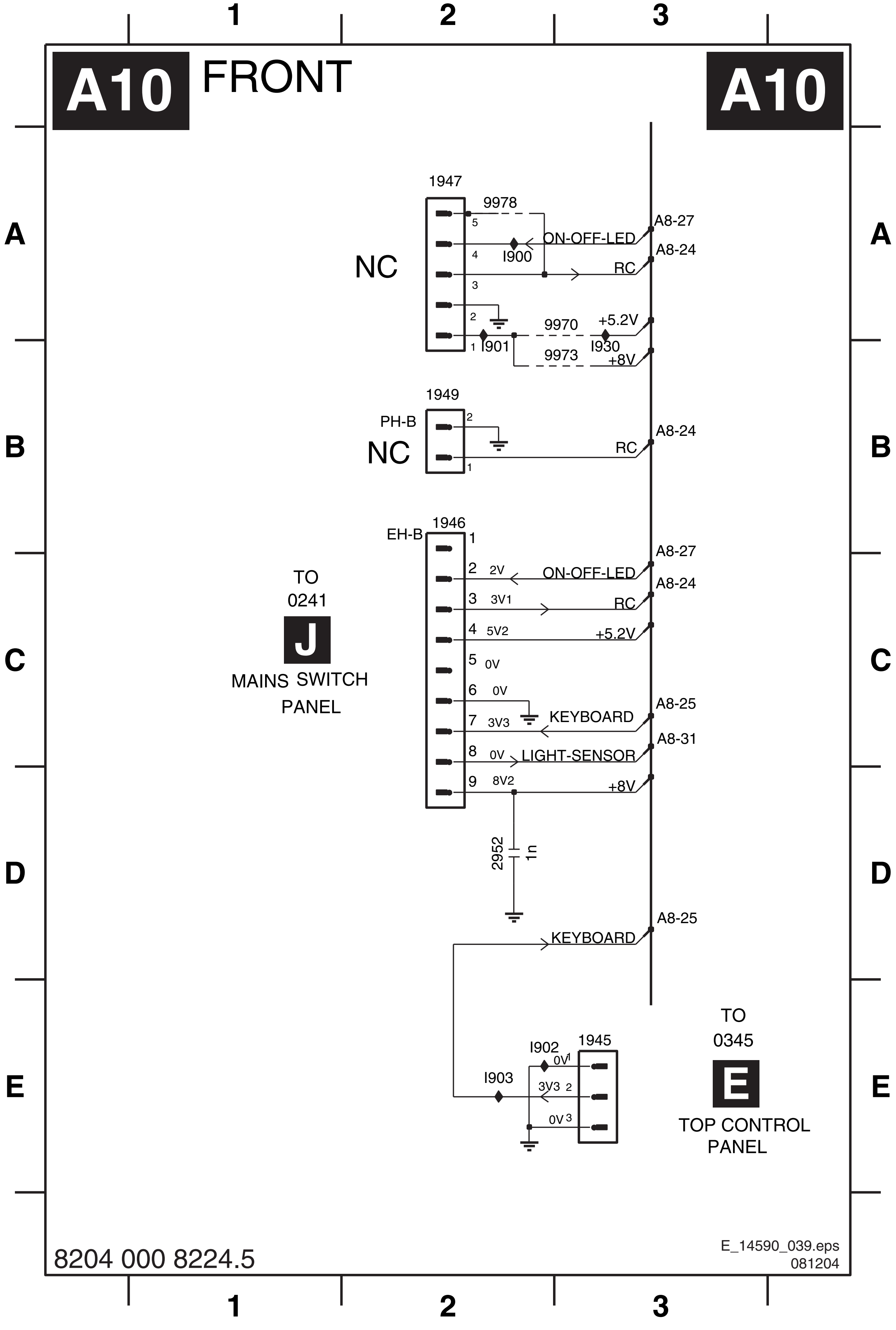
1950 A1	2900 B2	3900 A3	3901 B3	3902 C3	6900 B3	I953 A2	I954 A2	I955 B3	I956 B3	I957 A3



1
2
3
4
A
B
C
D
A9
RECEIVER
(RESERVED)
A9
1950
INP
CTRL CIRCUIT
VS
2
PIN
AGC
BAND PASS
DEM
OUT
1
GND
3
M1
M2
4
5
RC RECEIVER
A71
I953
I954
3900
220R
I957
+5.2V_MP
2900
100u
3901
470R
I955
6900
TLDR5400
I956
3902
1K8
RC
A8-24
ON-OFF-LED
A8-27
8204 000 8224.5
E_14590_038.eps
081204

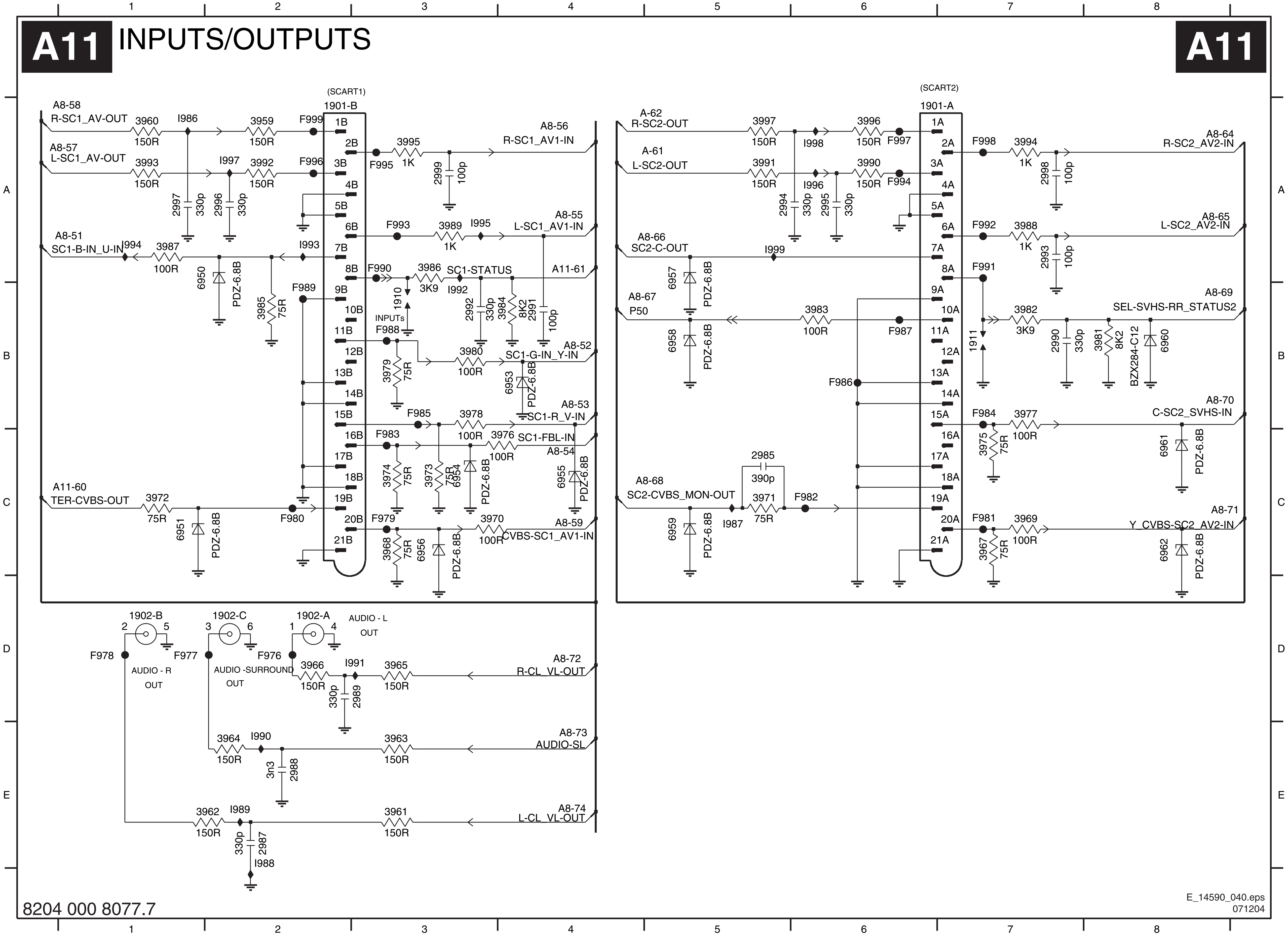
Large Signal Panel: Front

1945	E3
1946	B2
1947	A2
1949	B2
2952	D2
9970	A3
9973	B3
9978	A2
I900	A2
I901	B2
I902	E2
I903	E2
I930	B3



1
2
3
A
B
C
D
E
A10
FRONT
A10
1947
9978
NC
5
4
3
2
1
I900
ON-OFF-LED
A8-27
RC
A8-24
9970
+5.2V
I901
I930
9973
+8V
1949
PH-B
NC
2
1
RC
A8-24
1946
EH-B
1
2 2V
ON-OFF-LED
A8-27
3 3V1
RC
A8-24
4 5V2
+5.2V
5 0V
6 0V
7 3V3
KEYBOARD
A8-25
8 0V
LIGHT-SENSOR
A8-31
9 8V2
+8V
TO
0241
J
MAINS SWITCH
PANEL
2952
1n
KEYBOARD
A8-25
I902
1945
0V 1
I903
3V3 2
0V 3
TO
0345
E
TOP CONTROL
PANEL
8204 000 8224.5
E_14590_039.eps
081204

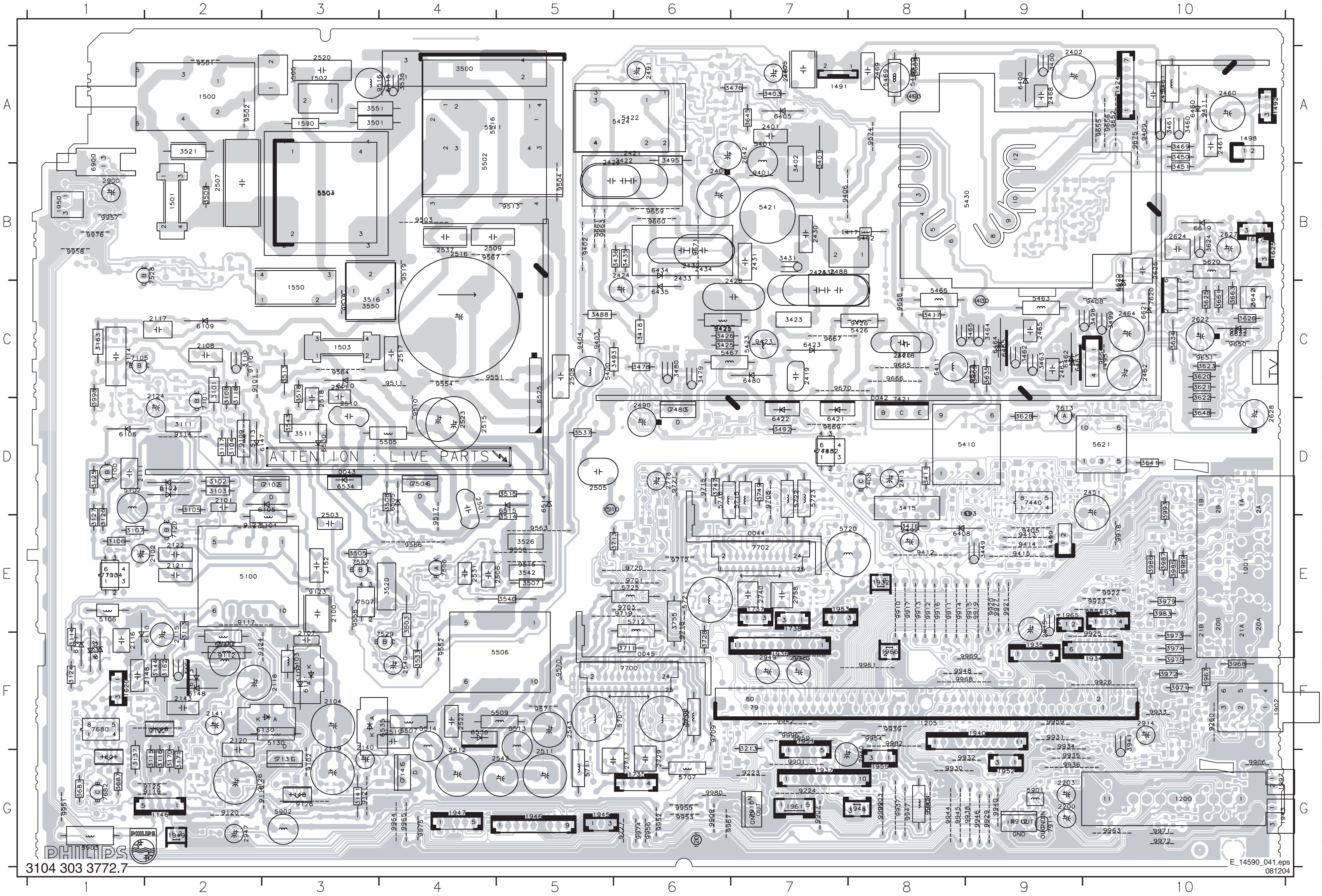
Large Signal Panel: Inputs/Outputs


A11
INPUTS/OUTPUTS
A11
(SCART1)
1901-B
(SCART2)
1901-A
A8-58
R-SC1_AV-OUT
A8-57
L-SC1_AV-OUT
A8-51
SC1-B-IN_U-IN
A11-60
TER-CVBS-OUT
A8-56
R-SC1_AV1-IN
A8-55
L-SC1_AV1-IN
A11-61
SC1-STATUS
A8-52
SC1-G-IN_Y-IN
A8-53
SC1-R_V-IN
SC1-FBL-IN
A8-54
A8-59
CVBS-SC1_AV1-IN
INPUTs
1910
1911
A-62
R-SC2-OUT
A-61
L-SC2-OUT
A8-66
SC2-C-OUT
A8-67
P50
A8-68
SC2-CVBS_MON-OUT
A8-64
R-SC2_AV2-IN
A8-65
L-SC2_AV2-IN
A8-69
SEL-SVHS-RR_STATUS2
A8-70
C-SC2_SVHS-IN
A8-71
Y_CVBS-SC2_AV2-IN
PDZ-6.8B
BZX284-C12
1902-B
1902-C
1902-A
AUDIO - R OUT
AUDIO -SURROUND OUT
AUDIO - L OUT
A8-72
R-CL_VL-OUT
A8-73
AUDIO-SL
A8-74
L-CL_VL-OUT
8204 000 8077.7
E_14590_040.eps
071204

1901-A	A6
1901-B	A2
1902-A	D2
1902-B	D1
1902-C	D2
1910	B3
1911	B7
2985	C5
2987	E2
2988	E2
2989	D3
2990	B7
2991	B4
2992	B3
2993	A7
2994	A5
2995	A6
2996	A2
2997	A1
2998	A7
2999	A3
3959	A2
3960	A1
3961	E3
3962	E2
3963	E3
3964	E2
3965	D3
3966	D2
3967	C7
3968	C3
3969	C7
3970	C3
3971	C5
3972	C1
3973	C3
3974	C3
3975	C7
3976	C4
3977	B7
3978	B3
3979	B3
3980	B3
3981	B8
3982	B7
3983	B6
3984	B4
3985	B2
3986	A3
3987	A1
3988	A7
3989	A3
3990	A6
3991	A5
3992	A2
3993	A1
3994	A7
3995	A3
3996	A6
3997	A5
6950	A1
6951	C1
6953	B4
6954	C3
6955	C4
6956	C3
6957	A5
6958	B5
6959	C5
6960	B8
6961	C8
6962	C8
F976	D2
F977	D1
F978	D1
F979	C3
F980	C2
F981	C7
F982	C6
F983	C3
F984	B7
F985	B3
F986	B6
F987	B6
F988	B3
F989	B2
F990	A3
F991	A7
F992	A7
F993	A3
F994	A6
F995	A3
F996	A2
F997	A6
F998	A7
F999	A2
I986	A1
I987	C5
I988	E2
I989	E2
I990	E2
I991	D3
I992	B3
I993	A2
I994	A1
I995	A3
I996	A6
I997	A2
I998	A6
I999	A5

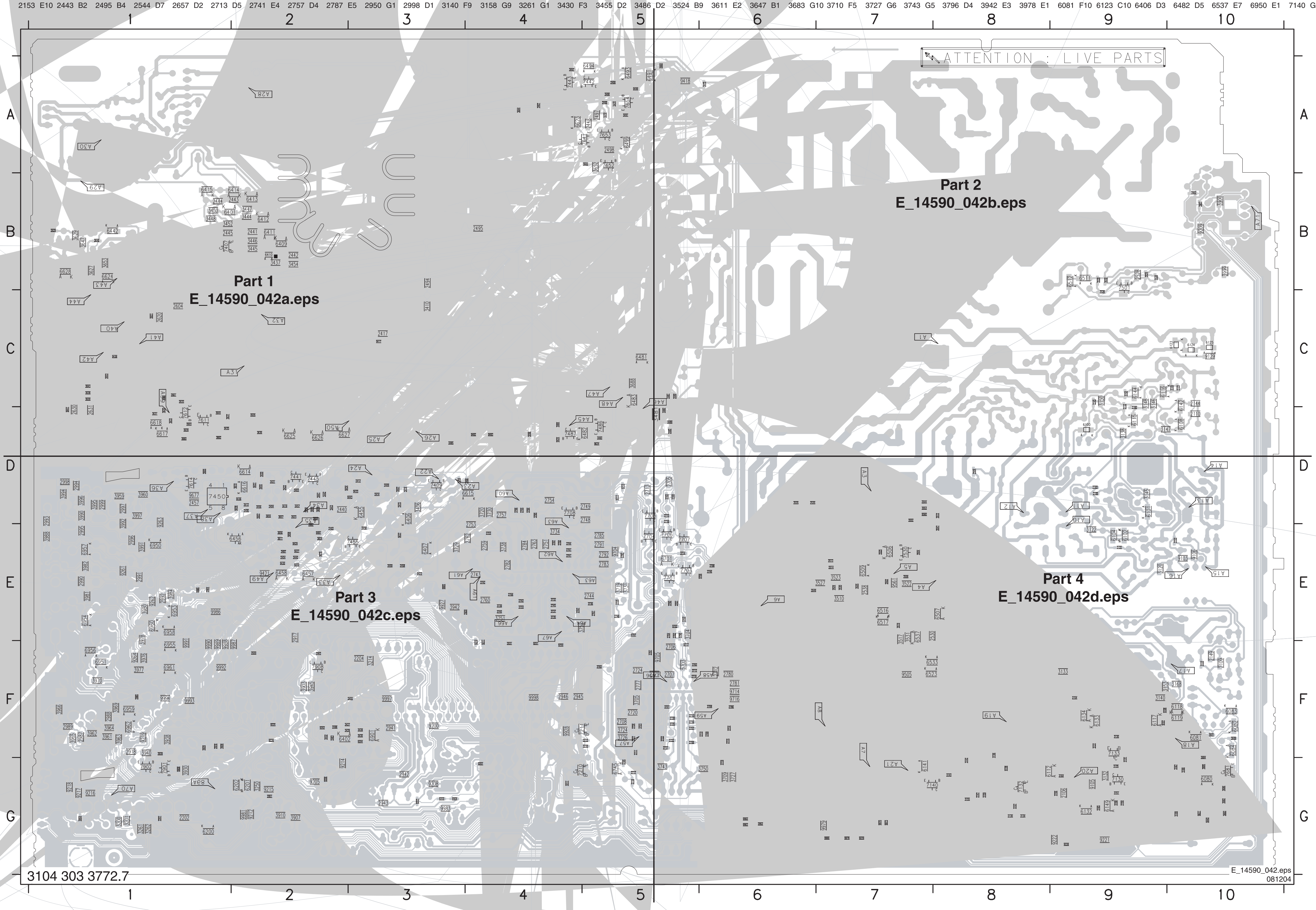
Layout Large Signal Panel (Top Side)

0042	C8
0043	D3
0044	E7
0045	F5
1146	G2
1148	G3
1149	F2
1200	G10
1201	G6
1205	F8
1417	B8
1424	A10
1430	C9
1491	A7
1492	A10
1493	A8
1495	C10
1498	A10
1499	D9
1500	A2
1501	B2
1502	A3
1503	C3
1505	A2
1510	E5
1550	B3
1590	A3
1601	G1
1620	F1
1625	B10
1627	B10
1693	D9
1735	G5
1737	E7
1738	E7
1901	E10
1902	F10
1932	E8
1933	E10
1934	F10
1935	F9
1936	F7
1937	G7
1940	F9
1943	G10
1945	G5
1946	G5
1947	G4
1948	G8
1949	G2
1950	B1
1951	G7
1952	G9
1953	E7
1955	G8
1961	G7
1965	E9
1966	F8
1997	G10
2100	E3
2101	D2
2102	E2
2104	F3
2107	F3
2108	C2
2111	D1
2114	C1
2115	E2
2116	F1
2117	C2
2118	F2
2119	F3
2120	F2
2121	E2
2122	E2
2124	C2
2126	G2
2140	G3
2141	F2
2143	F2
2148	F1
2152	E3
2200	G9
2203	G9
2400	B6
2401	A7
2402	A10
2405	A7
2413	D8
2418	C8
2419	C7
2420	C8
2421	B6
2422	A5
2423	A6
2424	C5
2425	C7
2426	C6
2430	B7
2431	B7
2432	B6
2433	B6
2434	B6
2435	C8
2450	A10
2451	D10
2460	A10
2461	A10
2462	C10
2463	C9
2464	C10
2465	C9
2468	A9
2469	A8
2487	A7
2488	C8
2490	D6
2491	A6
2492	E8
2501	D4
2503	E3
2505	D5
2506	E5
2507	A2
2508	C5
2509	B5
2510	D3
2511	G5
2512	G4
2515	D4
2516	B4
2517	C4
2518	D3
2519	F4
2520	A3
2522	F4
2523	D4
2531	E4
2537	B4
2540	F4
2541	C3
2542	G5
2543	F5
2622	C10
2624	B10
2625	B10
2627	B10
2628	D10
2642	A6
2717	G5
2729	G6
2740	E7
2758	E7
2778	D6
2900	B1
2914	F10
2915	E9
2940	F7
2947	G2
2948	F7
2949	F7
3101	C2
3102	D2
3103	D2
3104	D2
3105	E2
3106	E1
3107	E2
3108	C2
3110	C2
3111	D2
3113	E2
3114	E1
3115	G1
3116	G2
3117	D2
3118	C2
3124	F1
3125	D1
3126	E1
3127	E1
3137	G1
3141	G3
3144	F2
3161	F2
3162	F2
3163	C1
3170	G2
3171	G2
3213	F7
3400	A9
3401	A7
3402	A7
3403	A7
3409	C9
3411	D8
3415	D8
3416	E8
3417	C8
3418	C6
3423	C7
3425	C6
3426	C6
3431	B7
3435	B6
3436	B5
3449	E9
3450	A10
3451	B10
3460	A10
3461	A10
3462	C9
3463	C9
3464	C9
3465	C9
3469	A10
3476	A7
3478	C6
3479	C6
3480	C6
3488	C5
3492	D7
3493	C6
3495	A6
3498	C10
3499	C10
3500	A4
3501	A4
3503	E4
3505	E3
3507	E5
3508	D4
3509	B2
3511	D3
3513	C3
3514	E4
3515	D5
3516	C3
3518	C3
3520	E4
3521	A2
3526	E5
3533	F4
3536	A4
3537	D5
3540	E5
3542	E5
3543	D3
3550	C4
3551	A3
3620	C10
3621	C10
3622	C10
3623	C10
3624	B10
3625	C10
3626	C10
3628	D9
3634	C10
3635	C9
3641	D10
3642	B10
3645	A7
3648	D10
3661	C10
3663	C10
3681	G1
3687	G1
3689	A8
3711	F6
3713	E6
3728	F6
3747	E6
3749	D7
3755	E6
3904	E9
3941	F10
3967	F10
3968	F10
3971	F10
3972	F10
3973	F10
3974	E10
3975	F10
3979	E10
3983	E10
3985	E10
3986	E10
3987	E10
3989	E10
3993	D10
3998	C1
5100	E2
5102	D1
5103	F3
5104	E2
5105	F2
5106	E1
5111	F2
5112	F2
5113	D2
5130	F2
5400	C5
5401	A7
5402	B8
5410	D9
5411	C8
5421	B7
5422	A6
5423	C7
5424	A6
5425	C7
5426	C8
5430	B10
5461	A10
5463	C9
5465	C8
5466	A8
5467	C6
5469	A8
5502	A5
5503	A3
5504	A3
5505	D4
5506	E5
5507	F4
5509	F5
5511	A4
5513	G5
5514	G4
5515	A3
5516	A5
5620	B10
5621	D10
5701	F6
5702	F6
5707	G6
5708	F6
5711	G5
5712	F6
5715	E7
5716	E6
5720	E7
5721	E6
5722	D7
5723	D7
5725	E5
5901	G9
5902	G3
5903	G1
5904	G8
6103	D2
6105	D2
6106	D1
6107	F3
6109	C2
6110	E2
6111	F3
6113	F2
6114	D2
6120	F1
6121	E1
6122	F1
6130	F3
6147	D3
6148	F2
6400	A9
6405	A7
6408	E8
6421	D8
6422	D7
6423	C7
6434	B6
6435	C6
6460	A10
6462	C9
6463	C9
6464	C9
6465	C9
6480	C7
6505	D4
6510	C3
6514	D5
6515	D5
6525	C5
6530	D3
6534	D3
6535	F3
6536	G4
6619	B10
6620	C10
6621	C10
6622	C10
6900	B1
7100	D1
7101	C2
7102	D3
7103	E1
7104	E1
7105	C1
7120	E2
7131	F3
7141	G4
7408	D8
7421	D8
7440	D9
7480	D6
7482	D8
7483	D8
7502	E3
7504	D4
7506	E4
7507	E4
7528	B2
7529	F4
7613	D9
7620	C10
7680	F1
7682	G1
7700	F6
7702	E6
7910	G7
7911	G9
7912	G9
9101	C2
9102	F3
9109	D2
9110	C2
9112	F2
9114	D2
9117	E2
9118	G2
9119	G2
9120	G2
9121	G3
9122	F1
9123	E3
9124	F2
9125	G2
9126	G3
9127	E2
9223	G7
9224	G7
9227	G6
9260	F10
9401	B7
9402	B5
9403	C5
9404	C5
9405	E9
9406	B7
9408	C10
9409	A10
9410	A8
9411	A10
9412	E8
9413	E9
9414	E9
9415	E9
9423	C7
9425	C6
9426	C8
9501	A2
9502	A2
9503	B4
9504	B5
9510	D4
9511	C4
9513	B5
9515	E5
9516	A3
9517	E4
9518	C3
9519	B4
9551	C4
9552	F4
9554	C4
9556	E5
9558	E3
9563	E5
9564	C3
9566	E4
9567	B4
9570	F5
9571	F5
9620	C10
9622	C10
9623	C9
9650	C10
9651	C10
9652	A10
9655	A10
9656	A10
9658	C8
9659	B6
9660	B6
9661	B5
9663	B5
9664	C10
9665	C8
9666	C8
9667	C7
9669	D7
9670	C7
9671	B6
9674	A8
9675	A10
9701	E6
9703	E6
9708	D7
9709	F6
9712	E6
9715	D6
9718	E6
9719	E6
9720	E6
9721	D6
9901	G7
9902	G8
9903	G8
9906	G10
9907	G7
9909	G6
9910	E8
9911	E8
9912	E8
9913	E8
9914	E8
9915	E9
9916	E8
9917	E8
9918	E10
9919	E9
9920	E9
9921	E9
9922	E10
9923	E10
9924	E10
9925	E10
9926	F10
9929	G9
9930	G8
9931	F9
9932	G9
9933	F10
9934	F9
9935	G9
9936	G9
9937	G8
9938	G9
9939	F8
9940	G9
9942	F7
9943	G8
9944	G8
9945	G8
9946	G9
9947	G8
9948	F8
9949	F7
9950	F7
9951	G1
9952	G6
9953	G6
9954	F8
9955	G6
9956	G6
9957	B1
9958	B1
9959	F9
9961	F8
9963	G10
9964	G4
9965	G4
9967	G6
9968	F8
9969	F9
9971	G10
9972	G10
9974	G6
9975	G4
9976	B1
9977	E9
9980	G6
9982	F8
9996	F7

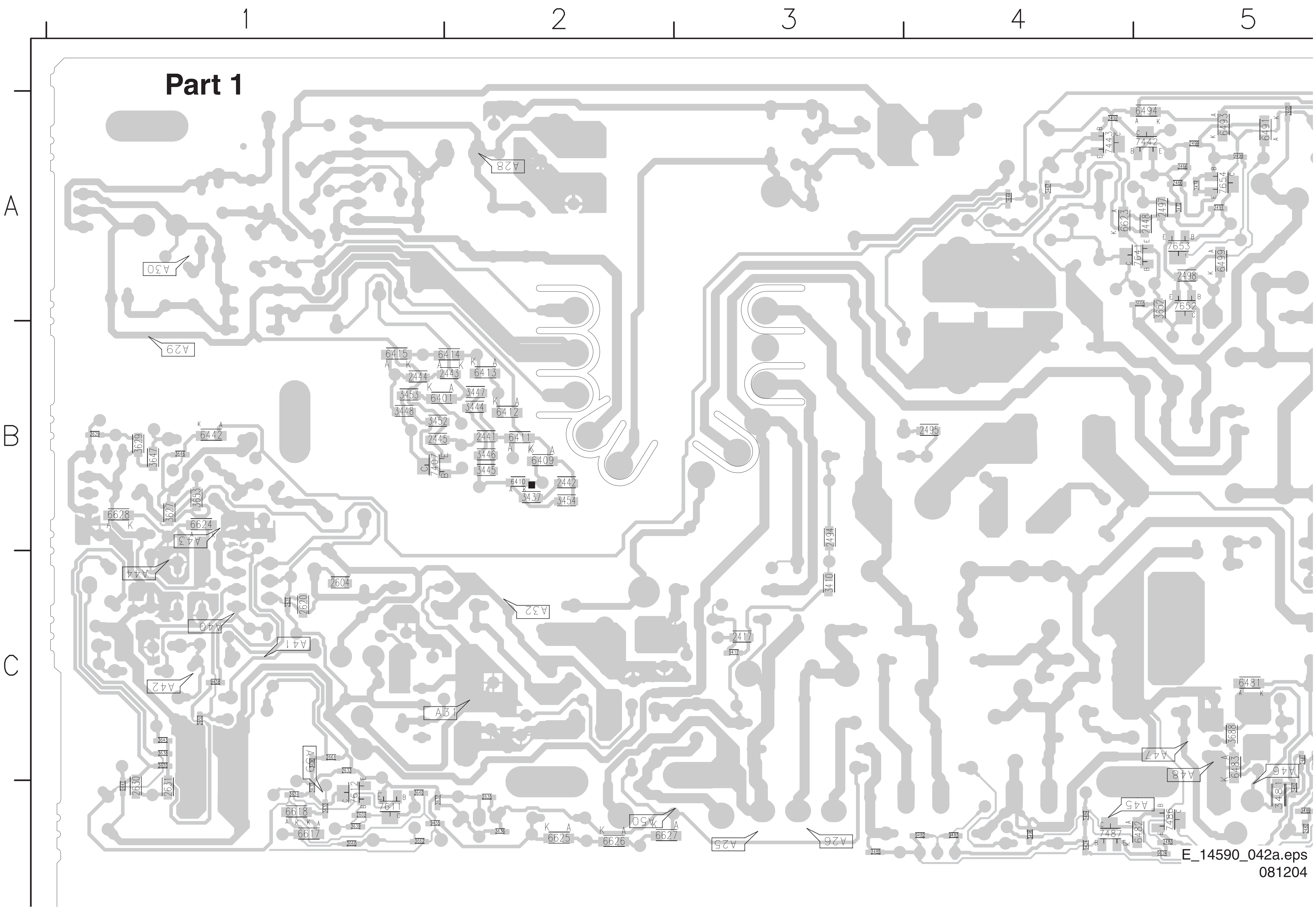


Overview Bottom Side)

2103	D9
2105	D9
2106	G9
2109	F10
2110	D10
2112	C9
2123	C10
2130	G8
2131	G9
2144	C10
2145	C9
2147	G8
2149	F10
2150	G9
2153	E10
2154	F9
2201	G1
2202	G1
2204	F3
2403	D2
2404	D2
2409	D3
2412	D3
2414	D3
2415	D3
2417	C3
2440	D2
2441	B2
2442	B2
2443	B2
2444	B1
2445	B1
2448	A5
2454	E2
2455	F3
2457	D1
2458	E3
2466	A5
2480	C5
2481	C5
2482	D5
2483	F2
2493	E2
2494	B3
2495	B4
2496	F2
2497	A5
2498	A5
2499	A5
2502	E7
2504	D8
2513	E7
2514	E7
2524	E7
2525	E7
2528	B9
2530	E7
2535	D6
2538	E7
2544	D7
2601	F10
2603	D1
2604	C1
2605	D1
2620	C1
2621	C1
2623	D2
2629	B1
2630	D1
2631	D1
2633	C1
2635	D2
2653	C1
2656	D2
2657	D2
2659	D2
2660	A5
2661	C1
2662	E2
2702	E5
2704	E5
2705	D5
2706	F5
2707	F5
2708	F5
2709	F6
2710	F6
2711	F5
2712	F6
2713	D5
2714	F6
2715	F6
2716	F5
2718	F5
2719	G6
2720	F5
2721	F5
2722	F5
2723	E4
2724	F5
2725	E5
2726	F5
2727	F5
2728	F5
2741	E4
2742	E4
2743	E4
2744	E5
2745	E4
2746	E5
2747	E4
2748	D5
2749	D5
2750	E4
2751	E4
2753	E4
2754	D4
2755	D4
2756	E4
2757	D4
2759	E4
2760	E4
2761	E5
2762	E4
2763	E4
2777	F5
2779	F5
2780	F6
2781	F6
2782	E4
2783	E5
2784	E4
2785	E5
2786	F6
2787	E5
2791	E5
2792	E5
2916	F1
2917	E2
2918	F1
2929	E4
2930	F2
2931	F4
2941	F3
2942	G3
2943	G3
2944	E1
2945	F4
2946	F4
2950	G1
2951	G2
2952	G6
2985	F1
2987	F1
2988	F1
2989	F1
2990	E1
2991	E1
2992	E1
2993	D1
2994	D1
2995	E1
2996	E1
2997	D1
2998	D1
2999	D1
3109	G10
3120	E9
3121	E9
3122	E9
3123	F10
3130	F9
3131	F9
3132	G9
3133	F9
3134	G8
3135	G9
3136	F8
3138	D9
3140	F9
3142	G8
3143	G8
3145	D9
3146	C9
3147	D9
3148	C9
3149	C10
3150	C9
3151	G9
3152	C9
3153	F9
3155	G8
3156	G9
3157	G8
3158	G9
3159	G8
3160	D9
3164	G9
3165	G9
3166	G10
3167	G10
3168	F10
3200	G1
3201	G1
3210	F5
3211	G4
3212	F5
3214	F3
3250	G2
3261	G1
3262	G1
3404	D3
3406	D3
3407	D3
3410	C3
3412	D2
3414	D3
3419	D2
3420	D2
3421	D2
3422	D2
3427	F2
3428	F3
3429	F2
3430	F3
3432	F2
3437	B2
3440	E2
3441	D2
3442	D2
3443	D2
3444	B2
3445	B2
3446	B2
3447	B2
3448	B1
3452	B1
3453	B1
3454	B2
3455	D2
3456	D2
3457	D2
3458	E3
3459	E3
3466	A5
3467	A4
3472	A5
3474	A5
3475	A6
3481	D5
3482	D5
3483	D5
3484	D4
3485	D3
3486	D2
3487	E2
3489	D5
3490	D4
3491	A5
3496	D4
3497	A4
3504	E7
3506	E7
3510	E7
3512	D8
3517	E7
3519	E7
3522	E7
3523	E7
3524	B9
3525	E7
3527	E7
3528	C9
3529	B9
3530	E7
3531	E7
3532	B9
3534	B9
3535	D6
3547	E8
3549	E6
3552	D7
3553	D7
3610	D2
3611	E2
3627	B1
3629	B1
3630	C1
3631	D1
3632	D1
3633	D1
3636	D2
3637	D1
3638	C1
3639	D1
3640	D1
3643	C1
3644	A4
3646	B1
3647	B1
3649	F10
3652	A5
3653	B1
3654	E2
3655	D2
3656	E2
3657	D2
3658	E2
3659	D2
3660	D1
3662	D1
3664	D2
3665	A5
3682	G10
3683	G10
3684	F10
3685	G10
3686	G10
3688	C5
3690	C1
3701	E5
3702	E5
3703	D5
3704	E5
3705	F5
3706	F5
3707	F5
3708	F6
3709	G6
3710	F5
3712	F5
3714	E5
3715	D5
3716	D5
3717	G5
3718	G5
3719	E5
3720	D4
3721	F5
3722	F5
3723	F5
3724	F5
3725	F5
3726	F5
3727	G6
3729	E3
3730	D4
3731	E5
3732	E4
3733	E4
3734	E4
3735	E4
3736	E5
3737	E4
3738	E4
3739	E4
3740	E4
3741	E4
3742	E4
3743	G5
3744	E4
3745	G5
3746	E6
3748	D5
3750	G6
3751	E4
3752	E4
3760	F5
3790	E5
3791	F5
3792	E5
3793	F5
3794	D4
3795	D4
3796	D4
3797	E4
3798	E6
3900	B10
3901	B10
3902	B10
3903	F2
3907	G2
3910	G2
3928	F1
3929	F1
3930	G1
3938	F1
3939	F1
3940	F1
3942	E3
3943	F2
3945	F2
3959	D1
3960	D1
3961	F1
3962	F1
3963	F1
3964	F1
3965	F1
3966	F1
3969	F1
3970	F1
3976	F1
3977	F1
3978	E1
3980	E1
3981	E1
3982	E1
3984	E1
3988	E1
3990	D1
3991	E1
3992	D1
3994	D1
3995	D1
3996	D1
3997	D1
3999	B10
6080	G10
6081	F10
6082	F10
6083	F10
6084	F10
6100	D9
6101	D9
6102	E9
6104	E9
6108	D10
6112	G9
6115	D9
6116	C9
6117	F9
6118	F10
6119	F10
6123	C10
6124	C10
6125	C10
6132	G9
6133	F9
6134	F9
6141	G7
6142	C10
6144	C9
6149	G9
6200	G1
6201	G2
6202	G2
6401	B1
6402	F2
6406	D3
6407	E3
6409	B2
6410	B2
6411	B2
6412	B2
6413	B2
6414	B2
6415	B1
6442	B1
6455	D3
6456	E1
6457	E2
6458	E2
6481	C5
6482	D5
6483	C5
6491	A5
6493	A5
6494	A5
6499	A5
6506	E7
6507	E7
6509	E7
6511	B9
6512	C9
6516	E7
6517	E7
6523	F7
6533	F8
6537	E7
6614	D2
6615	D3
6616	D2
6617	D1
6618	D1
6623	A5
6624	B1
6625	D2
6626	D2
6627	D2
6628	B1
6701	E5
6745	G5
6901	F3
6950	E1
6951	F1
6953	E1
6954	E1
6955	E1
6956	F1
6957	E1
6958	E1
6959	F1
6960	E1
6961	F1
6962	F1
7130	G9
7132	G8
7133	F9
7140	G7
7210	G5
7211	F5
7407	B1
7409	D3
7441	D2
7442	A5
7443	A4
7445	D2
7450	D1
7455	E3
7486	D5
7487	D4
7501	C9
7530	E7
7611	D1
7612	C1
7614	D1
7641	A4
7652	B5
7653	A5
7654	A5
7681	G10
7701	E5
7703	E5
7704	E5
7705	D5
7706	E5
7707	E5
7708	D4
7901	G1
7902	G1
7908	F2
9103	E10
9105	G9
9106	E10
9107	F9
9108	F9
9128	G8
9129	C10
9200	F3
9201	G4
9202	F2
9203	G3
9204	F3
9205	G2
9206	G2
9207	G3
9208	G3
9209	B10
9210	F4
9211	F4
9212	G2
9214	G2
9215	G2
9216	G1
9217	G1
9218	G1
9219	F1
9221	G9
9222	G9
9225	F2
9226	F2
9228	G9
9229	G7
9250	F4
9251	F4
9261	E1
9262	E1
9263	D1
9264	F1
9417	C3
9418	A5
9421	E2
9422	E3
9424	D4
9427	E2
9428	D2
9429	E2
9430	E2
9431	D2
9432	E2
9433	D3
9434	D2
9435	D1
9436	D2
9437	E3
9438	C1
9440	G10
9441	D1
9443	D3
9481	E2
9482	D4
9483	D4
9499	A5
9505	F7
9560	D7
9561	E7
9621	G10
9624	D5
9676	E2
9677	D1
9702	E5
9704	E5
9705	F5
9706	E6
9707	E5
9711	D5
9713	D5
9714	F6
9716	F6
9717	F5
9904	G3
9905	E3
9908	G1
9927	E3
9928	F4
9960	G6
9962	G6
9966	G7
9970	G7
9973	G7
9978	G7
9979	G7
9981	G2
9983	G3
9985	E1
9986	E1
9987	F2
9988	F1
9989	F1
9990	F1
9991	F1
9992	F1
9993	F1
9994	F1
9997	F3
9998	F4

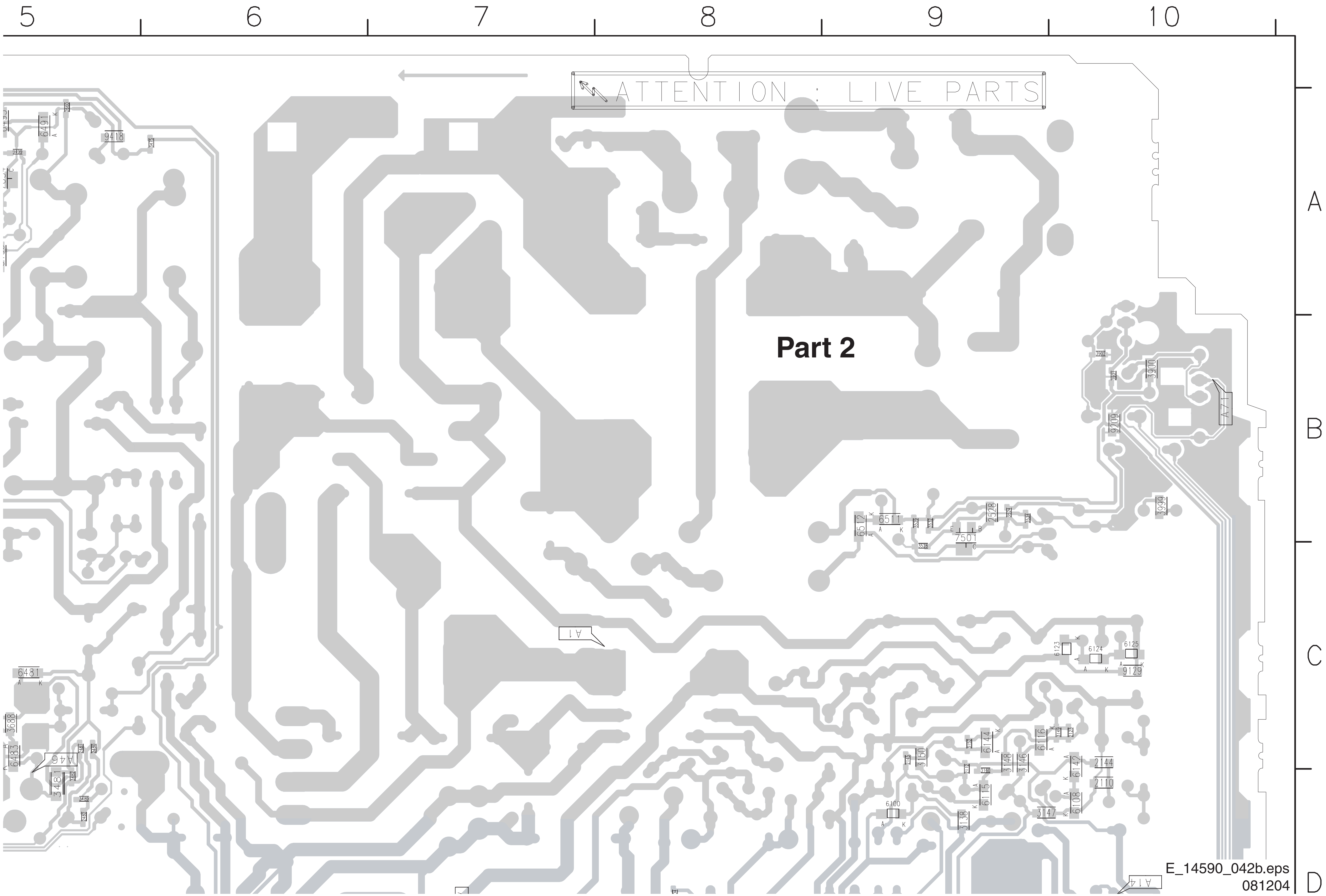


Layout Large Signal Panel (Part 1 Bottom Side)


1
2
3
4
5
A
B
C
Part 1
A28
A30
A29
6415
6414
6413
2444
2443
3453
6401
3447
3444
6412
3448
3452
2445
2441
6411
3446
6409
3445
7407
6410
3437
2442
3454
6442
3629
3647
3627
3653
6628
6624
A43
A44
2604
2620
A32
A40
A41
A42
A31
A49
2630
2631
7612
7611
6618
6617
6625
6626
6627
A50
A25
A26
2417
2494
3410
2495
6494
6493
6491
7443
7442
7654
6623
2448
2497
7641
7653
6499
2498
3652
7652
6481
3688
A47
A48
A46
6483
3481
A45
7487
6482
7486

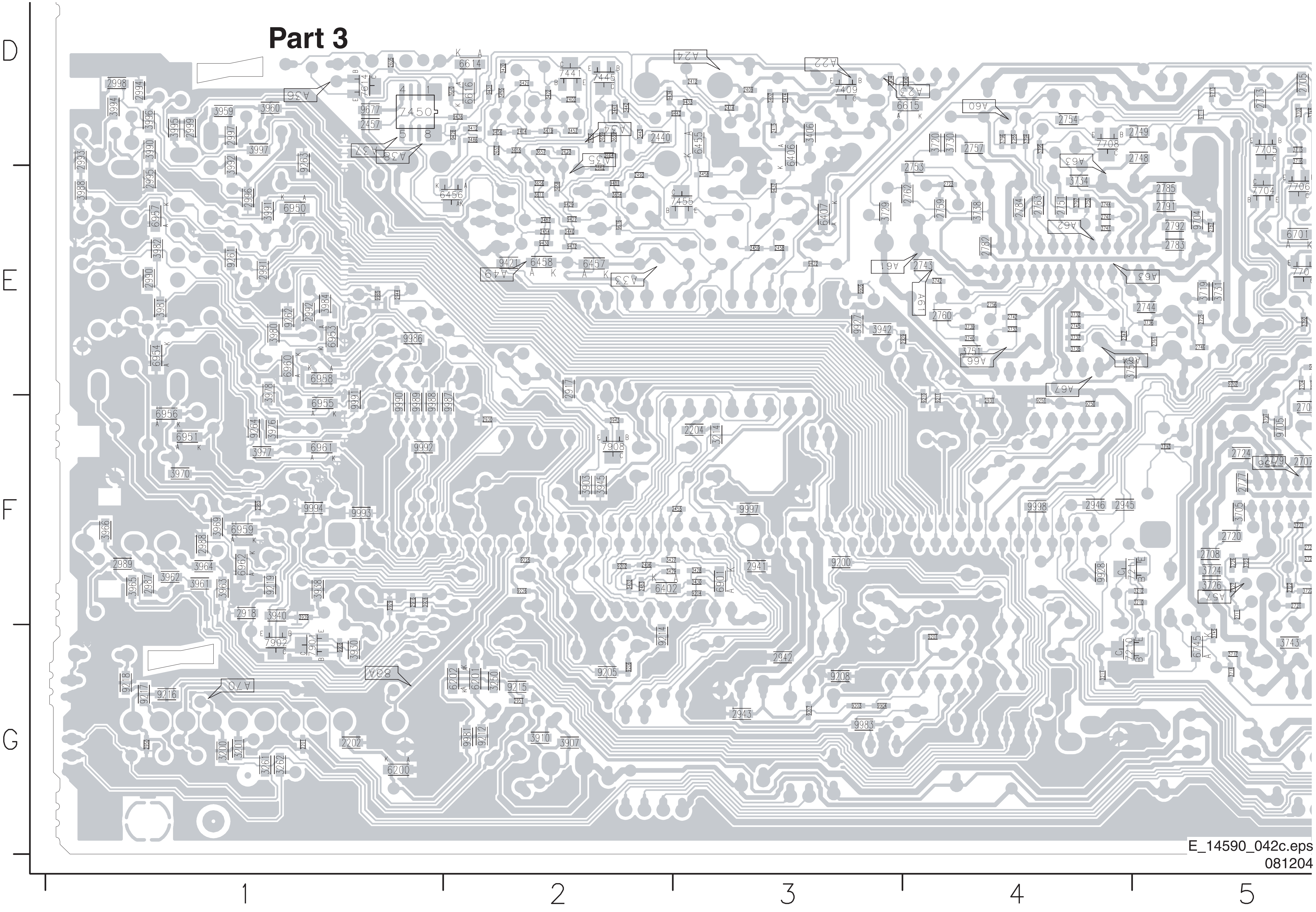
E_14590_042a.eps
081204

Layout Large Signal Panel (Part 2 Bottom Side)


5
6
7
8
9
10
A
B
C
D
ATTENTION : LIVE PARTS
Part 2
6491
9418
6481
3688
6483
3481
A46
A1
6512
6511
7501
2528
3900
9209
A71
3999
6123
6124
6125
9129
6144
6116
3150
3148
3146
6142
2144
2110
6115
6108
3147
6100
3138
A14

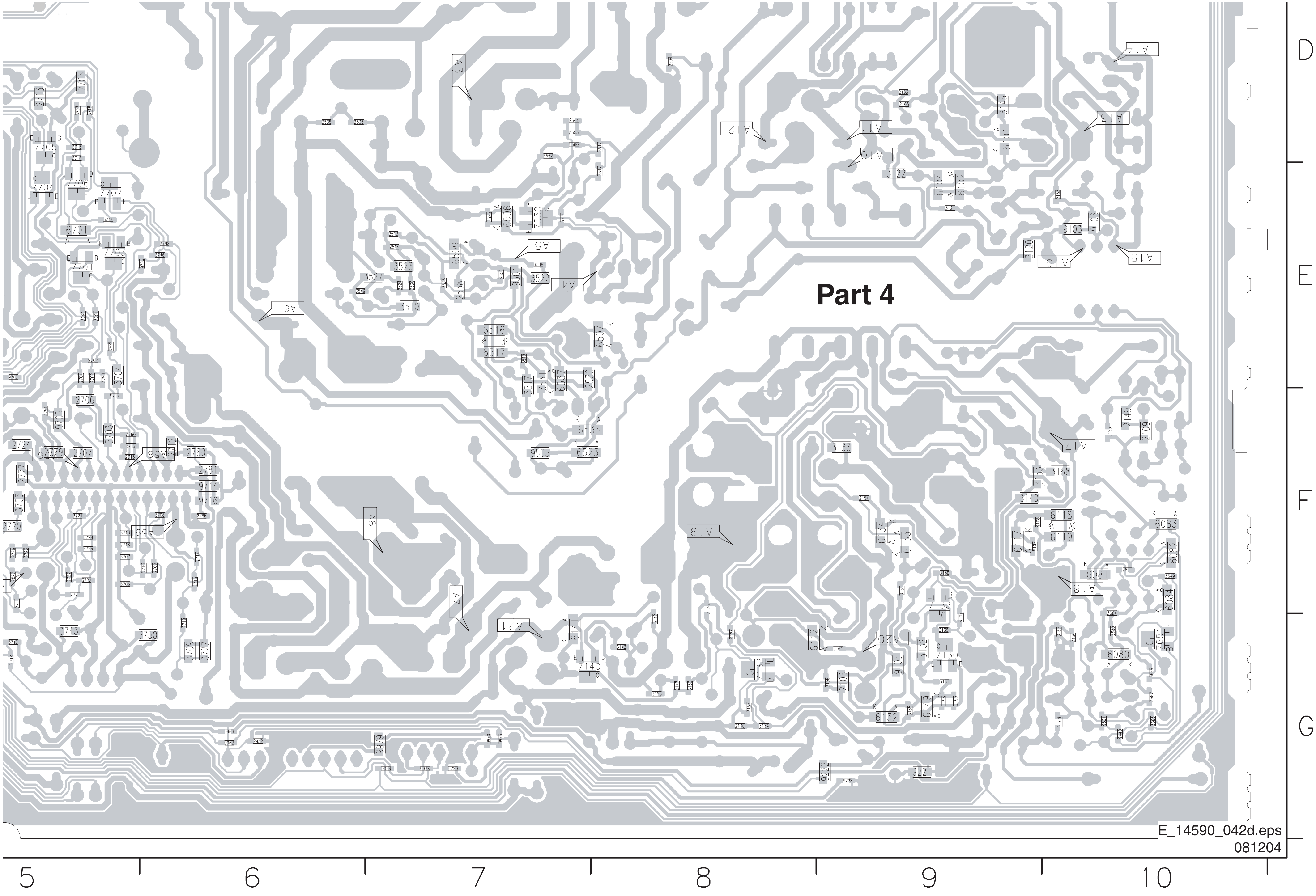
E_14590_042b.eps
081204

Layout Large Signal Panel (Part 3 Bottom Side)


Part 3
D
E
F
G
1
2
3
4
5

E_14590_042c.eps
081204

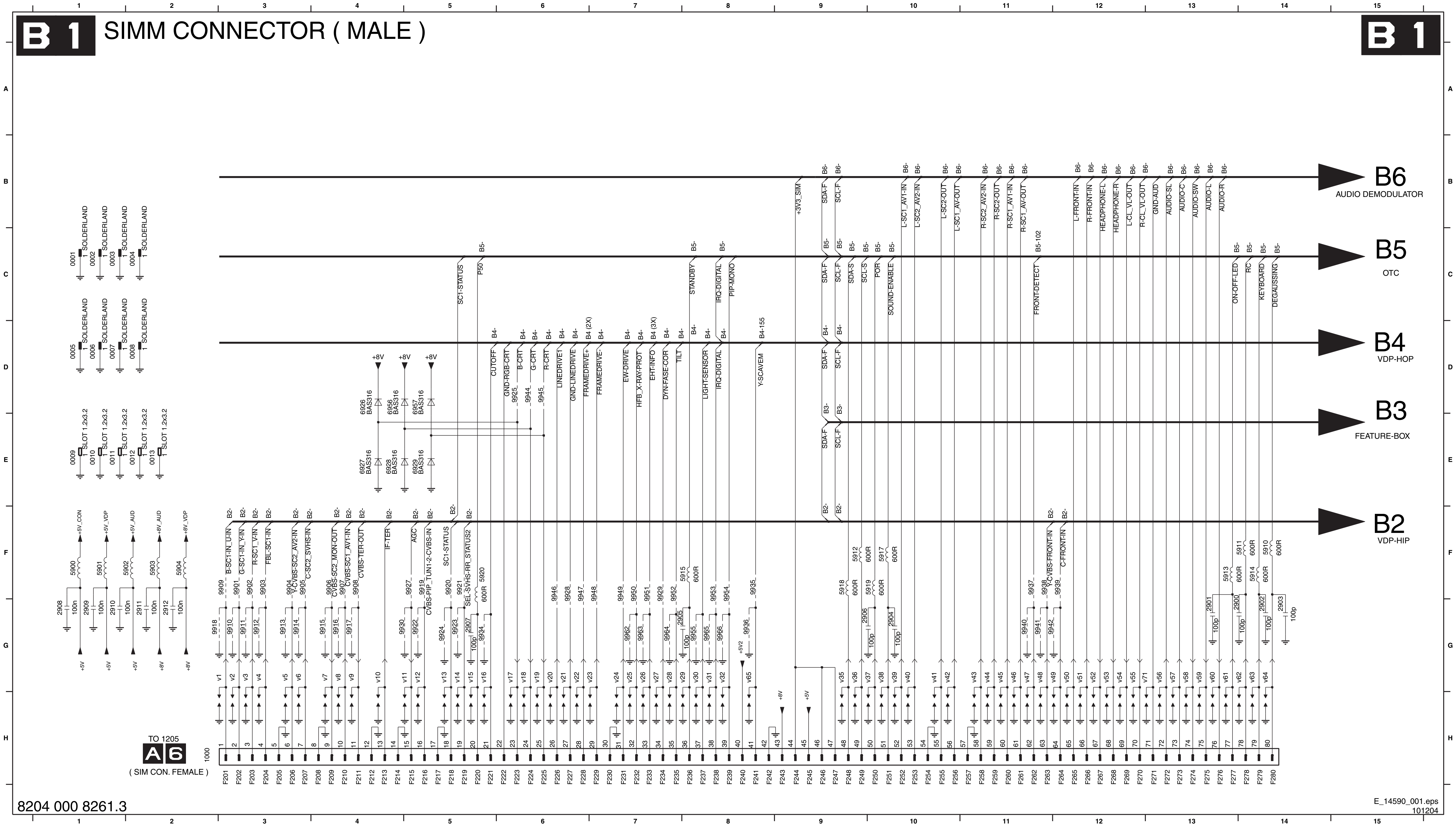
Layout Large Signal Panel (Part 4 Bottom Side)


Part 4
D
E
F
G
5
6
7
8
9
10
A3
A4
A5
A6
A7
A8
A10
A11
A12
A13
A14
A15
A16
A17
A18
A19
A20
A21
A58
A59
2713
2705
7705
7704
7706
7707
6701
7703
7701
3704
2706
9705
5703
2724
2779
2707
2712
2780
2781
9714
9716
2777
3705
2720
3743
3750
3709
3771
3527
3523
3510
6509
2538
9561
3522
6506
7530
6516
6517
6507
3517
3531
6537
2530
6533
6523
9505
3122
6104
6102
6101
3145
9103
9106
3120
3133
3153
3168
3140
6118
6119
2149
2109
6083
6082
6081
6084
6080
7681
6134
6133
6117
7133
6112
7130
3132
9105
2106
6132
6149
6141
7140
7132
9221
9222
9976

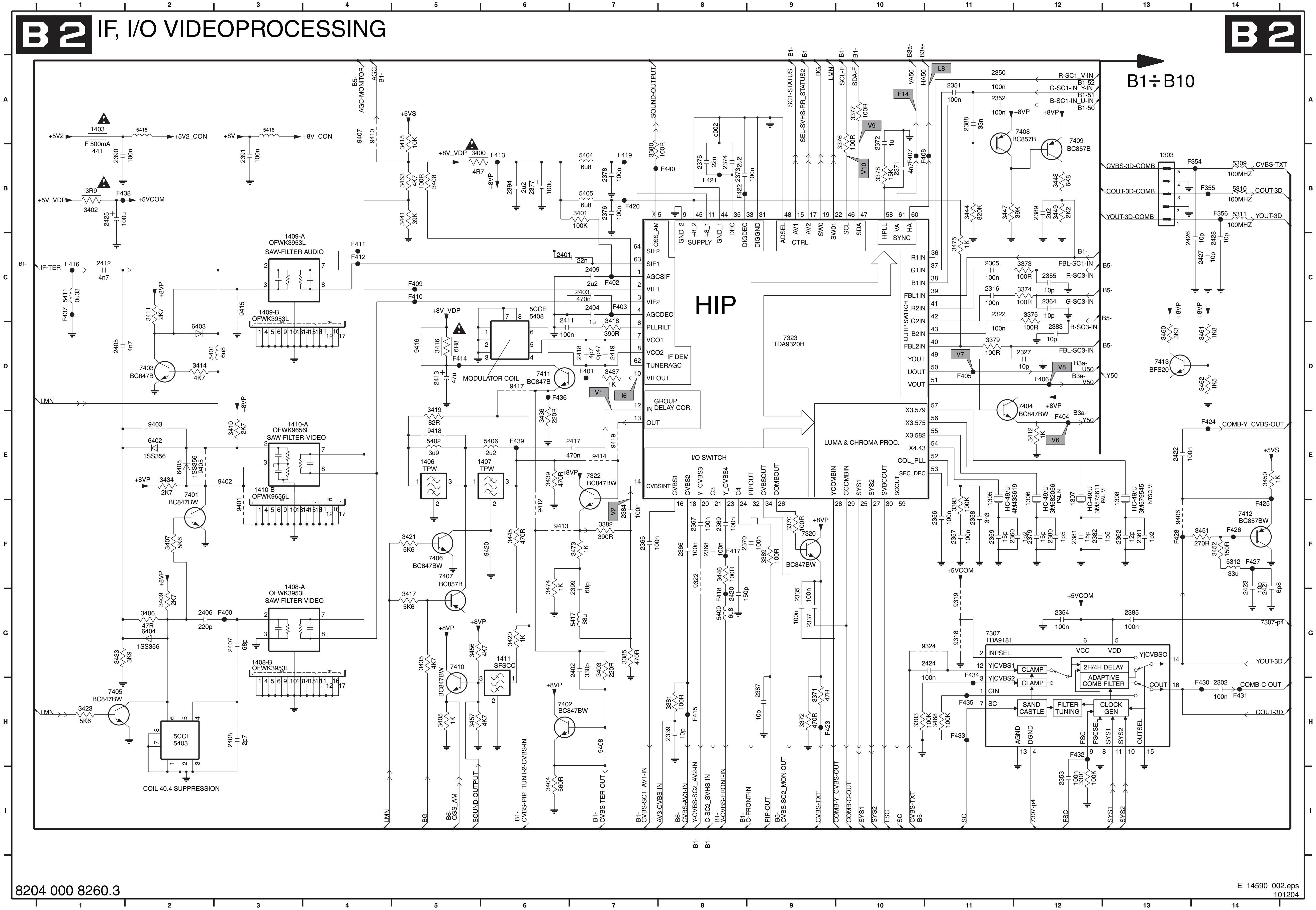
E_14590_042d.eps
081204

Small Signal Board: SIMM Connector (Male)

v1 G3	v6 G3	v11 G5	v16 G5	v21 G6	v26 G7	v31 G8	v38 G10	v43 G11	v48 G11	v53 G12	v58 G13	v63 G14	0002 C1	0007 D1	0012 E2	2902 G14	2907 G5	2912 G2	5904 F2	5914 F14	5920 F5	6956 D4	9904 F3	9909 F3	9914 G3	9919 F5	9924 G5	9930 G5	9938 F11	9944 D6	9949 F7	9954 F8	9965 G8
v2 G3	v7 G4	v12 G5	v17 G6	v22 G6	v27 G7	v32 G8	v39 G10	v44 G11	v49 G12	v54 G12	v59 G13	v64 G14	0003 C1	0008 D2	0013 E2	2903 G14	2908 G1	5900 F1	5910 F14	5915 F8	6926 D4	6957 D5	9905 F3	9910 G3	9915 G4	9920 F5	9925 D6	9934 G5	9939 F12	9945 D6	9950 F7	9955 G8	9966 G8
v3 G3	v8 G4	v13 G5	v18 G6	v23 G7	v28 G7	v35 G9	v40 G10	v45 G11	v50 G12	v55 G12	v60 G13	v65 G8	0004 C2	0009 E1	1000 H2	2904 G10	2909 G1	5901 F1	5911 F14	5917 F10	6927 E4	9901 F3	9906 F4	9911 G3	9916 G4	9921 F5	9927 F5	9935 F8	9940 G11	9946 F6	9951 F7	9962 G7	
v4 G3	v9 G4	v14 G5	v19 G6	v24 G7	v29 G8	v36 G9	v41 G10	v46 G11	v51 G12	v56 G13	v61 G13	v71 G12	0005 D1	0010 E1	2900 G14	2905 G8	2910 G1	5902 F2	5912 F9	5918 F9	6928 E4	9902 F3	9907 F4	9912 G3	9917 G4	9922 G5	9928 F6	9936 G8	9941 G11	9947 F6	9952 F7	9963 G7	
v5 G3	v10 G4	v15 G5	v20 G6	v25 G7	v30 G8	v37 G10	v42 G10	v47 G11	v52 G12	v57 G13	v62 G14	0001 C1	0006 D1	0011 E1	2901 G13	2906 G9	2911 G2	5903 F2	5913 F13	5919 F10	6929 E5	9903 F3	9908 F4	9913 G3	9918 G2	9923 G5	9929 F7	9937 F11	9942 G12	9948 F7	9953 F8	9964 G7	

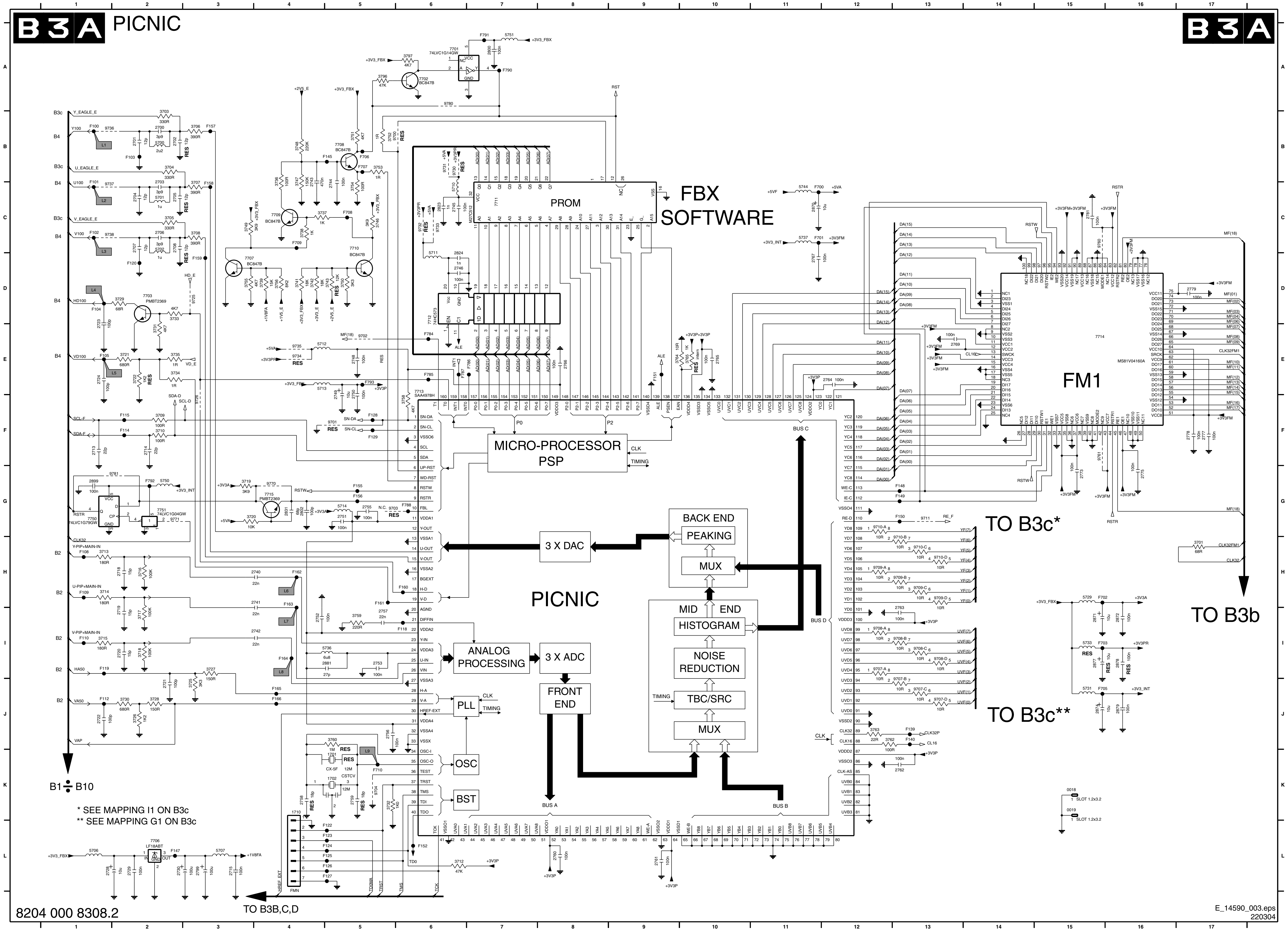

B1
SIMM CONNECTOR (MALE)
B6
AUDIO DEMODULATOR
B5
OTC
B4
VDP-HOP
B3
FEATURE-BOX
B2
VDP-HIP
SOLDERLAND
SLOT 1.2x3.2
+5V_CON
+5V_VDP
+5V_AUD
+8V_AUD
+8V_VDP
100n
BAS316
+8V
+5V
+3V3_SIM
SDA-F
SCL-F
SDA-S
SCL-S
POR
SOUND-ENABLE
L-SC1_AV1-IN
L-SC2_AV2-IN
L-SC2-OUT
L-SC1_AV-OUT
R-SC2_AV2-IN
R-SC2-OUT
R-SC1_AV1-IN
R-SC1_AV-OUT
FRONT-DETECT
L-FRONT-IN
R-FRONT-IN
HEADPHONE-L
HEADPHONE-R
L-CL_VL-OUT
R-CL_VL-OUT
GND-AUD
AUDIO-SL
AUDIO-C
AUDIO-SW
AUDIO-L
AUDIO-R
ON-OFF-LED
RC
KEYBOARD
DEGAUSSING
SC1-STATUS
P50
STANDBY
IRQ-DIGITAL
PIP-MONO
CUTOFF
GND-RGB-CRT
B-CRT
G-CRT
R-CRT
LINEDRIVE1
GND-LINEDRIVE
FRAMEDRIVE+
FRAMEDRIVE-
EW-DRIVE
HFB_X-RAY-PROT
EHT-INFO
DYN-FASE-COR
TILT
LIGHT-SENSOR
Y-SCAVEM
B-SC1-IN_U-IN
G-SC1-IN_Y-IN
R-SC1_V-IN
FBL-SC1-IN
Y-CVBS-SC2_AV2-IN
C-SC2_SVHS-IN
CVBS-SC2_MON-OUT
CVBS-SC1_AV1-IN
CVBS-TER-OUT
IF-TER
AGC
CVBS-PIP_TUN1-2-CVBS-IN
SC1-STATUS
SEL-SVHS-RR_STATUS2
CVBS-FRONT-IN
C-FRONT-IN
600R
100p
TO 1205
A6
(SIM CON. FEMALE)
1000
8204 000 8261.3
E_14590_001.eps
101204
]

Small Signal Board: IF. I/O Video Processing


B2
IF, I/O VIDEOPROCESSING
B2
B1÷B10
HIP
7323
TDA9320H
IF DEM
GROUP DELAY COR.
I/O SWITCH
LUMA & CHROMA PROC.
OUTP SWITCH
SUPPLY
CTRL
SYNC
7307
TDA9181
INPSEL
CLAMP
2H/4H DELAY
ADAPTIVE COMB FILTER
SAND-CASTLE
FILTER TUNING
CLOCK GEN
1409-A OFWK3953L SAW-FILTER AUDIO
1409-B OFWK3953L
1410-A OFWK9656L SAW-FILTER-VIDEO
1410-B OFWK9656L
1408-A OFWK3953L SAW-FILTER VIDEO
1408-B OFWK3953L
5CCE 5408
MODULATOR COIL
5CCE 5403
COIL 40.4 SUPPRESSION
1406 TPW
1407 TPW
1411 SFSCC
1303
+5V2
+5V2_CON
+8V
+8V_CON
+5V_VDP
+5VCOM
+8V_VDP
+5VS
+8VP
+5VCOM
IF-TER
LMN
SOUND-OUTPUT
AGC-MONITOR
AGC
CVBS-3D-COMB
COUT-3D-COMB
YOUT-3D-COMB
CVBS-TXT
COUT-3D
YOUT-3D
COMB-Y_CVBS-OUT
COMB-C-OUT
R-SC1_V-IN
G-SC1-IN_Y-IN
B-SC1-IN_U-IN
FBL-SC1-IN
R-SC3-IN
G-SC3-IN
B-SC3-IN
FBL-SC3-IN
SC1-STATUS
SEL-SVHS-RR_STATUS2
BG
SCL-F
SDA-F
VA50
HA50
U50
V50
Y50
QSS_AM
CVBS-PIP_TUN1-2-CVBS-IN
CVBS-TER-OUT
CVBS-SC1_AV1-IN
AV3-CVBS-IN
CVBS-AV3-IN
Y-CVBS-SC2_AV2-IN
C-SC2_SVHS-IN
Y-CVBS-FRONT-IN
C-FRONT-IN
PIP_OUT
CVBS-SC2_MON-OUT
CVBS-TXT
COMB-Y_CVBS-OUT
COMB-C-OUT
SYS1
SYS2
FSC
SC
7307-p4
8204 000 8260.3
E_14590_002.eps
101204

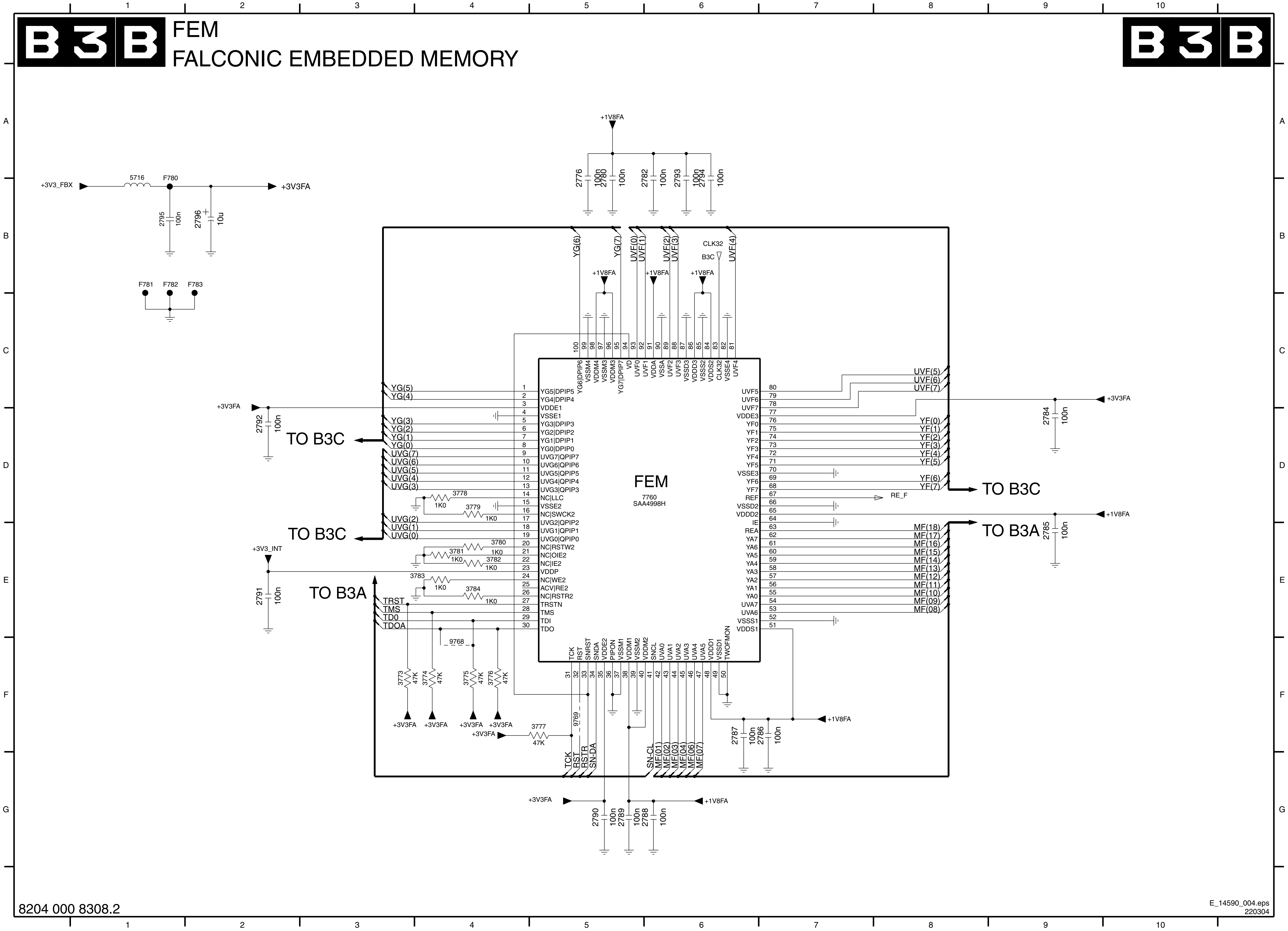
1303	B13	3410	E3
1305	E11	3411	C2
1306	E12	3412	E12
1307	E12	3414	D2
1308	E13	3415	A5
1403	A1	3416	D5
1406	E5	3417	G5
1407	E5	3418	D7
1408-A	F4	3419	E5
1408-B	G3	3420	G6
1409-A	C4	3421	F5
1409-B	C3	3423	H1
1410-A	E4	3433	G1
1410-B	E3	3434	E2
1411	G6	3435	G5
2302	H14	3436	E6
2305	C11	3437	D7
2316	C11	3439	E6
2322	C11	3441	B5
2327	D12	3444	B11
2335	G9	3445	F6
2337	G9	3446	F8
2339	H8	3447	B11
2350	A11	3448	B12
2351	A11	3449	B12
2352	A11	3450	E14
2353	I12	3451	F14
2354	G12	3452	F14
2355	C12	3456	G5
2356	F11	3457	H5
2357	F11	3460	D13
2358	F11	3461	D14
2359	F11	3462	D14
2360	F12	3463	B5
2361	F13	3468	H11
2362	F13	3473	F7
2364	C12	3474	F6
2365	F7	3475	C11
2366	F8	5309	B14
2367	F8	5310	B14
2368	F8	5311	B14
2369	F8	5312	F14
2370	F8	5401	D2
2371	B10	5402	E5
2372	A10	5403	H2
2373	B8	5404	B7
2374	B8	5405	B7
2375	B8	5406	E6
2376	B7	5408	C6
2377	B6	5409	G8
2378	B7	5411	C1
2379	F12	5415	A2
2380	F12	5416	A3
2381	F12	5417	G7
2382	F12	6402	E2
2383	D12	6403	D2
2384	F7	6404	G2
2385	G13	6405	E2
2387	H9	7307	G11
2388	A11	7320	F9
2389	B12	7322	E7
2390	B1	7323	D9
2391	B3	7401	E2
2394	B6	7402	H7
2399	F7	7403	D2
2401	C6	7404	D12
2402	G7	7405	H1
2403	C7	7406	F5
2404	C7	7407	F5
2405	D1	7408	A12
2406	G2	7409	A12
2407	G3	7410	G5
2408	H3	7411	D6
2409	C7	7412	F14
2411	D6	7413	D13
2412	C1	9318	G11
2413	D5	9319	G11
2417	E7	9322	F8
2418	D7	9324	G11
2419	D7	9401	F3
2420	G8	9402	E3
2421	F14	9403	E2
2422	E13	9405	E2
2423	F14	9406	F13
2424	G11	9407	A4
2425	B1	9408	H7
2426	C13	9410	A4
2427	C14	9412	F6
2428	C14	9413	F6
3301	I12	9414	E7
3303	H10	9415	C3
3370	F9	9416	D5
3371	H9	9417	D6
3372	H9	9418	E5
3373	C12	9419	E7
3374	C12	9420	F6
3375	C12	F354	B14
3376	A10	F355	B14
3377	A10	F356	B14
3378	B10	F400	G3
3379	D11	F401	D7
3380	B7	F402	C7
3381	H8	F403	C7
3382	F7	F404	E12
3385	G7	F405	D11
3389	F9	F406	D12
3393	F11	F407	B10
3400	B5	F408	B11
3401	B7	F409	C5
3402	B1	F410	C5
3403	G7	F411	C4
3404	I6	F412	C4
3405	H5	F413	B6
3406	G2	F414	D5
3407	F2	F415	H8
3408	B5	F416	C1
3409	G2	F417	F8

Small Signal Board: PICNIC


B3A
PICNIC
FBX
SOFTWARE
PROM
MICRO-PROCESSOR
PSP
FM1
MS81V04160A
BACK END
PEAKING
MUX
3 X DAC
PICNIC
MID
END
HISTOGRAM
NOISE
REDUCTION
TBC/SRC
MUX
ANALOG
PROCESSING
3 X ADC
FRONT
END
PLL
OSC
BST
BUS A
BUS B
BUS C
BUS D
TO B3c*
TO B3c**
TO B3b
TO B3B,C,D
B1 ÷ B10
* SEE MAPPING I1 ON B3c
** SEE MAPPING G1 ON B3c
8204 000 8308.2
E_14590_003.eps
220304

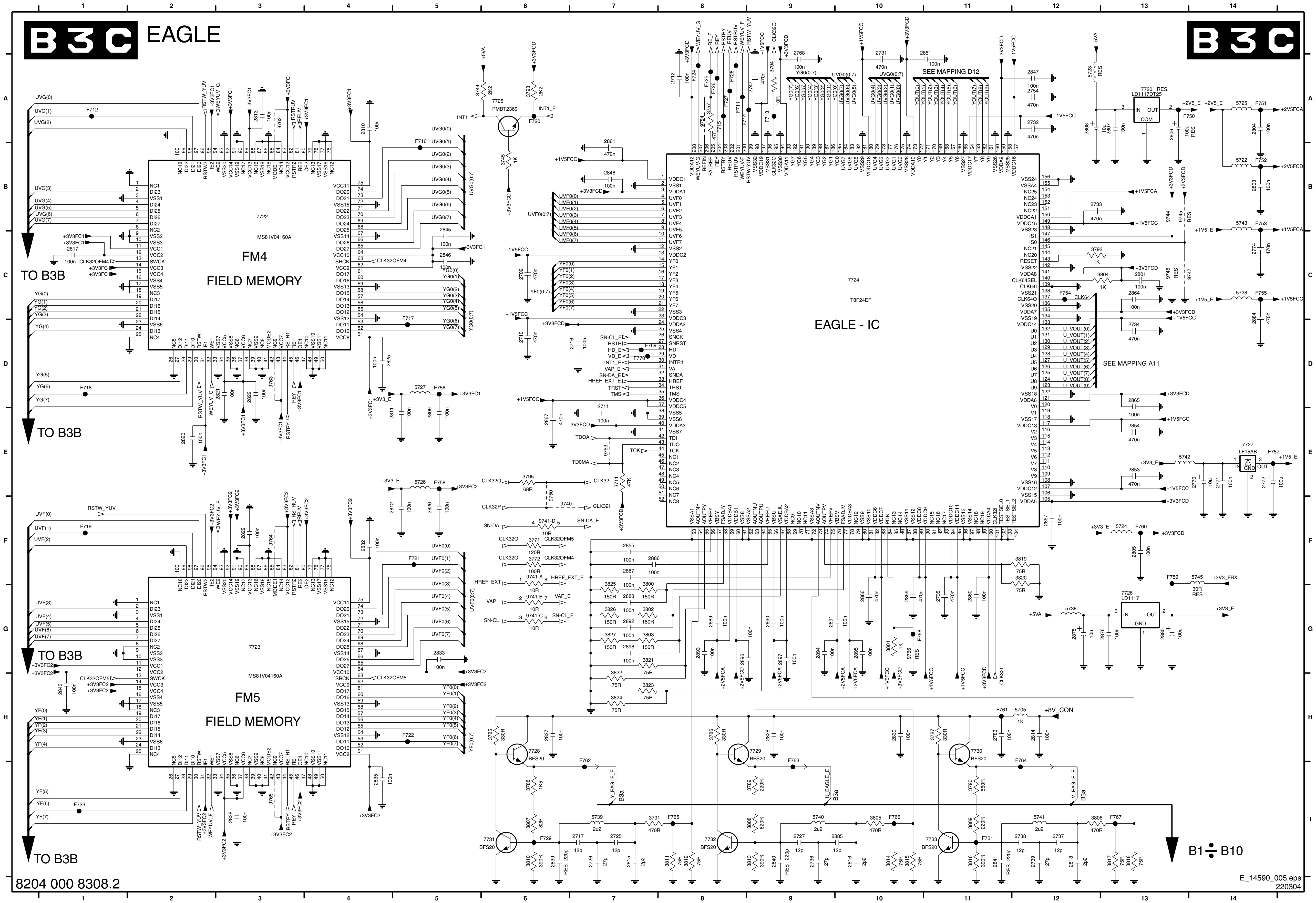
0018	K15
0019	K15
1701	K5
1702	K5
1710	K4
2700	B2
2701	B2
2702	B2
2703	C2
2704	C2
2705	C2
2706	C2
2707	C2
2708	C2
2713	F1
2714	F2
2715	L3
2718	H2
2719	I2
2720	I2
2721	J2
2722	J1
2723	E1
2724	E1
2728	L1
2729	L2
2730	L2
2740	H4
2741	H4
2742	I4
2743	C4
2744	C5
2745	C6
2746	D6
2748	E5
2749	F5
2750	E5
2751	G5
2752	I4
2753	I5
2755	G5
2756	J5
2757	I5
2758	K4
2759	K5
2760	L8
2761	L9
2762	K13
2763	I13
2764	E12
2765	E10
2766	E8
2767	D11
2769	E13
2773	G15
2775	G16
2777	F17
2778	F17
2779	D17
2781	C15
2799	L3
2800	A7
2802	G4
2823	C6
2824	D6
2831	G4
2870	C11
2871	I15
2872	I16
2874	J15
2877	I15
2878	I16
2879	J16
2881	I5
2899	G1
3701	H17
3703	B2
3704	B2
3705	C2
3706	B3
3707	C3
3708	C3
3709	F2
3710	F2
3712	L6
3713	H1
3714	H1
3715	I1
3716	H2
3717	I2
3718	I2
3719	G3
3720	G3
3721	E2
3722	E2
3725	J3
3726	J2
3727	I3
3728	J2
3729	D2
3730	J2
3731	E2
3732	K5
3733	D2
3734	E2
3735	E2
3736	B4
3737	C4
3738	C4
3739	D4
3741	D4
3742	D4
3743	D5
3746	C5
3747	B4
3748	B4
3749	C3
3750	D5
3751	B5
3752	B5
3753	B5
3754	C5
3755	D3
3756	D4
3758	F6
3759	I5
3760	J5
3762	J12
3763	J12
3764	E9
3765	E10
3796	A5
3797	A6
5700	B2
5701	C2
5702	C2
5706	L1
5707	L3
5710	C6
5711	D6
5712	E4
5713	E4
5714	G5
5729	H15
5731	J15
5733	I15
5736	I5
5737	C11
5744	C11
5750	G2
5751	A7
7701	A6
7702	A6
7703	D2
7706	L2
7707	D4
7708	B5
7709	C4
7710	C5
7711	C7
7712	E6
7713	E6
7714	E15
7715	G4
7750	G1
7751	G2
9700	B6
9701	F5
9702	E5
9703	G5
9704	K5
9707-A	I12
9707-B	J13
9707-C	J13
9707-D	J13
9708-A	I12
9708-B	I13
9708-C	I13
9708-D	I13
9709-A	H12
9709-B	H13
9709-C	H13
9709-D	H13
9710-A	G12
9710-B	H13
9710-C	H13
9710-D	H13
9711	G13
9725	D3
9726	F3
9730	B6
9731	B6
9732	C6
9733	C6
9734	E4
9735	E4
9736	B1
9737	C1
9738	C1
9760	C15
9761	F15
9770	G4
9771	G2
9780	A6
9781	G2
F100	B1
F101	C1
F102	C1
F103	B2
F104	D1
F105	E1
F108	H1
F109	H1
F110	I1
F112	J1
F114	F2
F115	F2
F118	I6
F119	I1
F120	D2
F122	L5
F123	L5
F124	L5
F125	L5
F126	L5
F127	L5
F128	F5
F129	F5
F139	J13
F140	J13
F145	B5
F147	L2
F148	G13
F149	G13
F150	G13
F151	E9
F152	L6
F155	G5
F156	G5
F157	B3
F158	C3
F159	D3
F160	H6
F161	H5
F162	H4
F163	H4
F164	I4
F165	J4
F166	J4
F700	C11
F701	C11
F702	H15
F703	I15
F705	J15
F706	B5
F707	B5
F708	C5
F709	C4
F710	K5
F784	E6
F785	E6
F786	E7
F787	E6
F788	G6
F790	A7
F791	A7
F792	G2
F793	E5

Small Signal Board: FEM Falconic Embedded Memory


B3B
FEM
FALCONIC EMBEDDED MEMORY
+1V8FA
+3V3_FBX
5716
F780
+3V3FA
2795 100n
2796 10u
F781 F782 F783
2776 100n
2780 100n
2782 100n
2793 100n
2794 100n
YG(6) YG(7) UVF(0) UVF(1) UVF(2) UVF(3) UVF(4)
CLK32
B3C
FEM
7760
SAA4998H
YG(5) YG(4) YG(3) YG(2) YG(1) YG(0)
UVG(7) UVG(6) UVG(5) UVG(4) UVG(3) UVG(2) UVG(1) UVG(0)
TO B3C
TO B3C
TO B3A
TO B3C
TO B3A
+3V3FA
2792 100n
+3V3_INT
2791 100n
3778 1K0
3779 1K0
3780 1K0
3781 1K0
3782 1K0
3783 1K0
3784 1K0
TRST TMS TD0 TDOA
9768
3773 47K
3774 47K
3775 47K
3776 47K
3777 47K
9769
TCK RST RSTR SN-DA
SN-CL MF(01) MF(02) MF(03) MF(04) MF(05) MF(06) MF(07)
UVF(5) UVF(6) UVF(7)
YF(0) YF(1) YF(2) YF(3) YF(4) YF(5) YF(6) YF(7)
RE_F
MF(18) MF(17) MF(16) MF(15) MF(14) MF(13) MF(12) MF(11) MF(10) MF(09) MF(08)
2784 100n
2785 100n
+1V8FA
2787 100n
2786 100n
2790 100n
2789 100n
2788 100n
8204 000 8308.2
E_14590_004.eps
220304

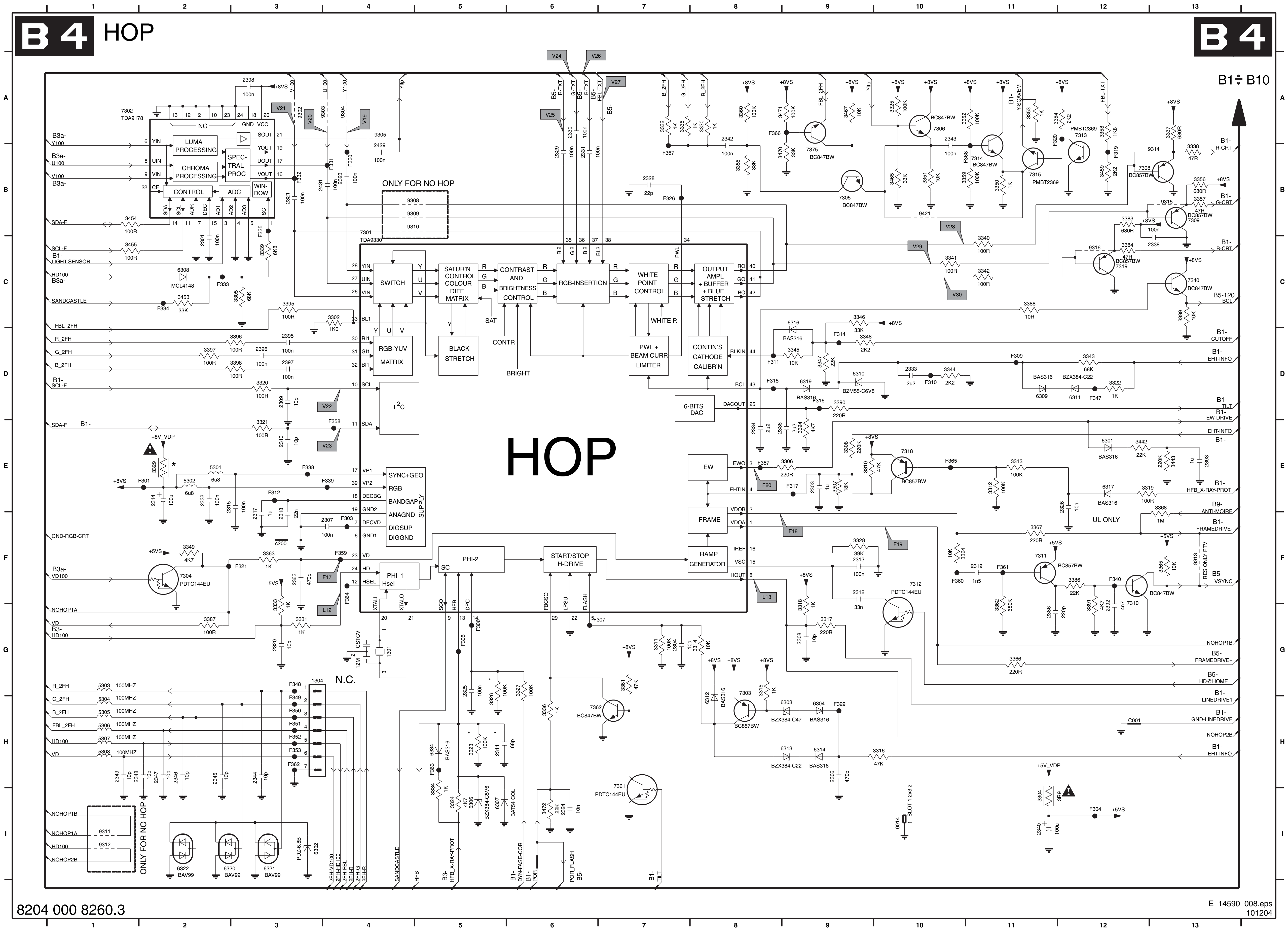
2776	A5
2780	A5
2782	A6
2784	D9
2785	E9
2786	F7
2787	F6
2788	G6
2789	G5
2790	G5
2791	E2
2792	D2
2793	A6
2794	A6
2795	B1
2796	B2
3773	F3
3774	F4
3775	F4
3776	F4
3777	F5
3778	D4
3779	D4
3780	E4
3781	E4
3782	E4
3783	E4
3784	E4
5716	B1
7760	D6
9768	F4
9769	F5
F780	B1
F781	B1
F782	B1
F783	B2

Small Signal Board: Eagle


B3C
EAGLE
B3C
7722
MS81V04160A
FM4
FIELD MEMORY
TO B3B
TO B3B
7723
MS81V04160A
FM5
FIELD MEMORY
TO B3B
TO B3B
7724
T8F24EF
EAGLE - IC
SEE MAPPING D12
SEE MAPPING A11
7725
PMBT2369
7720 RES
LD1117DT25
7726
LD1117
7727
LF15AB
+8V_CON
Y_EAGLE_E
U_EAGLE_E
V_EAGLE_E
B1÷B10
8204 000 8308.2
E_14590_005.eps
220304

2709	C6
2710	D6
2711	E7
2712	A8
2716	D7
2717	I7
2725	I7
2726	I7
2727	I9
2731	A10
2732	A12
2733	B12
2734	D13
2735	G11
2736	I9
2737	I12
2738	I12
2739	I12
2747	A9
2754	A12
2768	A9
2770	E14
2771	E14
2772	E14
2774	C14
2783	H11
2801	C13
2803	B14
2804	A14
2805	F13
2806	A13
2807	A13
2808	A12
2809	E5
2810	A4
2811	E5
2812	F5
2813	A3
2814	H12
2815	I7
2816	I10
2817	C1
2818	I12
2820	E2
2821	D3
2822	D3
2825	D4
2826	F5
2827	H6
2828	H9
2829	F3
2830	H10
2832	F4
2833	G5
2835	I4
2838	I3
2839	I6
2840	I9
2841	I11
2843	H1
2845	C5
2846	C5
2847	A12
2848	B7
2851	A11
2853	E13
2854	E13
2855	F7
2857	F12
2859	G10
2860	G11
2861	B7
2864	C13
2865	D13
2866	G10
2867	E6
2875	G12
2876	G13
2880	G13
2884	C14
2885	I10
2886	F7
2887	F7
2888	G7
2889	G8
2890	G9
2891	G9
2892	G7
2893	G8
2894	G9
2895	G10
2896	G8
2897	G9
2898	G7
3711	E7
3744	A5
3745	B6
3757	A8
3771	F6
3772	F6
3785	H6
3786	H8
3787	H11
3788	I6
3789	I9
3790	I11
3791	I7
3792	C12
3793	A6
3794	A9
3795	E6
3800	G7
3801	G10
3802	G7
3803	G7
3804	C13
3805	I10
3806	I12
3807	I6
3808	I9
3809	I11
3810	I6
3811	I8
3812	I8
3813	I9
3814	I10
3815	I10
3816	I11
3817	I13
3818	I13
3819	F12
3820	F12
3821	G7
3822	H7
3823	H7
3824	H7
3825	G7
3826	G7
3827	G7
5705	H12
5722	B14
5723	A12
5724	F13
5725	A14
5726	E5
5727	D5
5728	C14
5738	G12
5739	I7
5740	I9
5741	I12
5742	E13
5743	B14
5745	F14
7720	A13
7722	B3
7723	G3
7724	C10
7725	A6
7726	G13
7727	E14
7728	H6
7729	H9
7730	H11
7731	I6
7732	I8
7733	I11
9740	F6
9741-A	F6
9741-B	G6
9741-C	G6
9741-D	F6
9744	B13
9745	B13
9746	C13
9747	C14
9750	E6
9753	E7
9754	A8
9762	A3
9763	D3
9764	F3
9765	I3
9766	G10
F711	A8
F712	A1
F713	A9
F714	A8
F715	A8
F716	B5
F717	D5
F718	D1
F719	F1
F720	A6
F721	F5
F722	H5
F723	I1
F724	A8
F725	A8
F726	A8
F727	A8
F728	A8
F729	I6
F731	I11
F750	A14
F751	A14
F752	B14
F753	B14
F754	C12
F755	C14
F756	D5
F757	E14
F758	E5
F759	F13
F760	F13
F761	H11
F762	I7
F763	I9
F764	I12
F765	I8
F766	I10
F767	I13
F768	G10
F769	D7
F770	D7

Small Signal Board: HOP

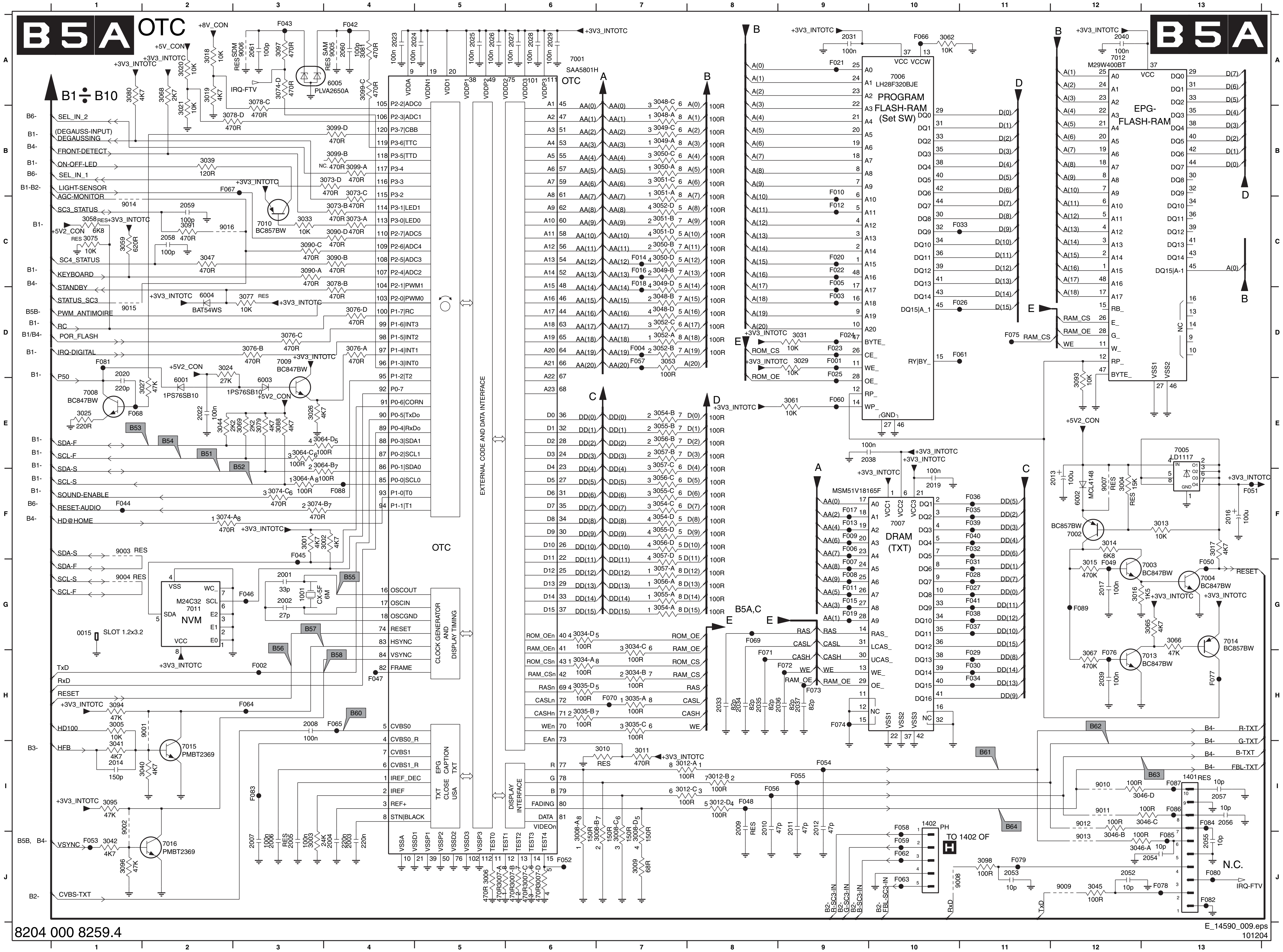

B4
HOP
B1÷B10
7302 TDA9178
LUMA PROCESSING
CHROMA PROCESSING
SPEC-TRAL PROC
CONTROL
ADC
WIN-DOW
ONLY FOR NO HOP
7301 TDA9330
SWITCH
SATUR'N CONTROL COLOUR DIFF MATRIX
CONTRAST AND BRIGHTNESS CONTROL
RGB-INSERTION
WHITE POINT CONTROL
OUTPUT AMPL + BUFFER + BLUE STRETCH
RGB-YUV MATRIX
BLACK STRETCH
PWL + BEAM CURR LIMITER
CONTIN'S CATHODE CALIBR'N
6-BITS DAC
I2C
SYNC+GEO
RGB
BANDGAP
ANAGND
DIGSUP
DIGGND
SUPPLY
EW
FRAME
RAMP GENERATOR
PHI-1 Hsel
PHI-2
START/STOP H-DRIVE
HOP
N.C.
UL ONLY
RES ONLY PTV
ONLY FOR NO HOP
B3a- Y100
B3a- U100
B3a- V100
SDA-F
SCL-F
B1- LIGHT-SENSOR
HD100
B3a- SANDCASTLE
FBL_2FH
R_2FH
G_2FH
B_2FH
B1- SCL-F
SDA-F
GND-RGB-CRT
B3a- VD100
NOHOP1A
VD
B3- HD100
B1- R-CRT
B1- G-CRT
B1- B-CRT
B5-120 BCL
B1- CUTOFF
B1- EHT-INFO
B1- TILT
B1- EW-DRIVE
EHT-INFO
B1- HFB_X-RAY-PROT
B9- ANTI-MOIRE
B1- FRAMEDRIVE-
B5- VSYNC
NOHOP1B
B5- FRAMEDRIVE+
B5- HD@HOME
B1- LINEDRIVE1
B1- GND-LINEDRIVE
NOHOP2B
B1- EHT-INFO
SANDCASTLE
HFB
B3- HFB_X-RAY-PROT
B1- DYN-FASE-COR
B1- POR
B5- POR_FLASH
B1- TILT
V19 V20 V21 V22 V23 V24 V25 V26 V27 V28 V29 V30
F17 F18 F19 F20 L12 L13
1 2 3 4 5 6 7 8 9 10 11 12 13
A B C D E F G H I

8204 000 8260.3

E_14590_008.eps
101204

Ref	Location
0014	I10
1301	G4
1304	G3
2301	C2
2303	E9
2304	G7
2306	H9
2307	F4
2308	G9
2309	D3
2310	E3
2311	H5
2312	F9
2313	F9
2314	E2
2315	E2
2317	F3
2318	F3
2319	F11
2320	G3
2321	B3
2323	B4
2324	I6
2325	G5
2326	E12
2328	B7
2329	B6
2330	A6
2331	B6
2332	E2
2333	D10
2334	E8
2336	E8
2338	C13
2340	I11
2342	A8
2343	A10
2344	H3
2345	H2
2346	H2
2347	H2
2348	H1
2349	H1
2363	F3
2386	G11
2392	G12
2393	E13
2395	D3
2396	D3
2397	D3
2398	A3
2429	B4
2431	B3
3302	C4
3304	I11
3305	C3
3306	E9
3307	E9
3308	E9
3310	E9
3311	G7
3312	E11
3313	E11
3314	G8
3315	G8
3316	H10
3317	G9
3318	G9
3319	E12
3320	D3
3321	E3
3322	D12
3323	H5
3324	I5
3325	A10
3326	H5
3327	G6
3328	F9
3329	E2
3330	A8
3331	G3
3332	A7
3333	G3
3334	I5
3335	A7
3336	H6
3337	A13
3338	B13
3339	C3
3340	C11
3341	C10
3342	C11
3343	D12
3344	D10
3345	D9
3346	C9
3347	D9
3348	D9
3349	F2
3350	B11
3351	B10
3352	A11
3353	A11
3354	A12
3355	B8
3356	B13
3357	B13
3358	A12
3359	B11
3360	A8
3361	G7
3362	G11
3363	F3
3364	F10
3365	F13
3366	G11
3367	F11
3368	E13
3383	B12
3384	C12
3386	F12
3387	G2
3388	C11
3390	D9
3391	G12
3394	E9
3395	C3
3396	D3
3397	D2
3398	D3
3399	C13
3442	E12
3443	E13
3453	C2
3454	B1
3455	C1
3459	B12
3465	B10
3467	A9
3470	B9
3471	A9
3472	I6
5301	E2
5302	E2
5303	G1
5304	H1
5305	H1
5306	H1
5307	H1
5308	H1
6301	E12
6302	I3
6303	H9
6304	H9
6306	I5
6307	I5
6308	C2
6309	D11
6310	D9
6311	D12
6312	H8
6313	H9
6314	H9
6316	C9
6317	E12
6319	D9
6320	I2
6321	I3
6322	I2
6334	H5
7301	B4
7302	A1
7303	G8
7304	F2
7305	B9
7306	A10
7308	B12
7309	B13
7310	G12
7311	F11
7312	F10
7313	A12
7314	B11
7315	B11
7318	E10
7319	C12
7340	C13
7361	I7
7362	H7
7375	B9
9302	A3
9303	A4
9304	A4
9305	A4
9308	B4
9309	B4
9310	B4
9311	I1
9312	I1
9313	F13
9314	B13
9315	B13
9316	C12
9421	B10
C001	H12
F301	E2
F303	F4
F304	I12
F305	G5
F306	G5
F307	G7
F309	D11
F310	D10
F311	D8
F312	E3
F314	D9
F315	D8
F316	D9
F317	E9
F319	B12
F320	A11
F321	F3
F326	B7
F329	H9
F330	B4
F331	B4
F332	B3
F333	C2
F334	C2
F335	B3
F338	E3
F339	E4
F340	F12
F347	D12
F348	G3
F349	H3
F350	H3
F351	H3
F352	H3
F353	H3
F357	E8
F358	E4
F359	F4
F360	F10
F361	F11
F362	H3
F363	H5
F364	F4
F365	E10
F366	A8
F367	B7
F368	B11
c200	F3

Small Signal Board: OTC


B5A
OTC
B1 ÷ B10
SAA5801H
7001
7006
LH28F320BJE
PROGRAM FLASH-RAM (Set SW)
7012
M29W400BT
EPG-FLASH-RAM
7007
MSM51V18165F
DRAM (TXT)
M24C32
7011
NVM
EXTERNAL CODE AND DATA INTERFACE
CLOCK GENERATOR AND DISPLAY TIMING
EPG CAPTION TXT
TXT CLOSE CAPTION USA
DISPLAY INTERFACE
+3V3_INTOTC
+5V2_CON
+8V_CON
SEL_IN_2
DEGAUSSING
FRONT-DETECT
ON-OFF-LED
SEL_IN_1
LIGHT-SENSOR
AGC-MONITOR
SC3_STATUS
SC4_STATUS
KEYBOARD
STANDBY
STATUS_SC3
PWM_ANTIMOIRE
RC
POR_FLASH
IRQ-DIGITAL
P50
SDA-F
SCL-F
SDA-S
SCL-S
SOUND-ENABLE
RESET-AUDIO
HD@HOME
TxD
RxD
RESET
HD100
HFB
VSYNC
CVBS-TXT
R-TXT
G-TXT
B-TXT
FBL-TXT
IRQ-FTV
TO 1402 OF
H
N.C.
8204 000 8259.4
E_14590_009.eps
101204

0015 G1
1001 G3
1401 I13
1402 I10
2001 G3
2002 G3
2003 J4
2004 J4
2005 J3
2006 J3
2007 J3
2008 H3
2009 I8
2010 I8
2011 I9
2012 I9
2013 F12
2014 I1
2016 F13
2017 G12
2019 F10
2020 D1
2022 E2
2023 A4
2024 A5
2025 A5
2026 A5
2027 A6
2028 A6
2029 A6
2031 A9
2033 H8
2034 H8
2035 H8
2036 H9
2037 H9
2038 E9
2039 H12
2040 A12
2052 J12
2053 J11
2054 J13
2055 J13
2056 I13
2057 I13
2058 C2
2059 C2
2060 A4
2061 A3
3001 F3
3002 F4
3003 J3
3004 F12
3005 H1
3006 J5
3007-A J5
3007-B J6
3007-C J6
3007-D J6
3008-A I6
3008-B I7
3008-C I7
3008-D I7
3009 J7
3010 I7
3011 I7
3012-A I7
3012-B I8
3012-C I7
3012-D I8
3013 F13
3014 F12
3015 G12
3016 G12
3017 F13
3018 A2
3019 A2
3020 A2
3021 B2
3024 D2
3025 E1
3026 E3
3027 E2
3029 D9
3031 D9
3033 C3
3034-A H6
3034-B H7
3034-C G7
3034-D G6
3035-A H7
3035-B H6
3035-C H7
3035-D H6
3039 B2

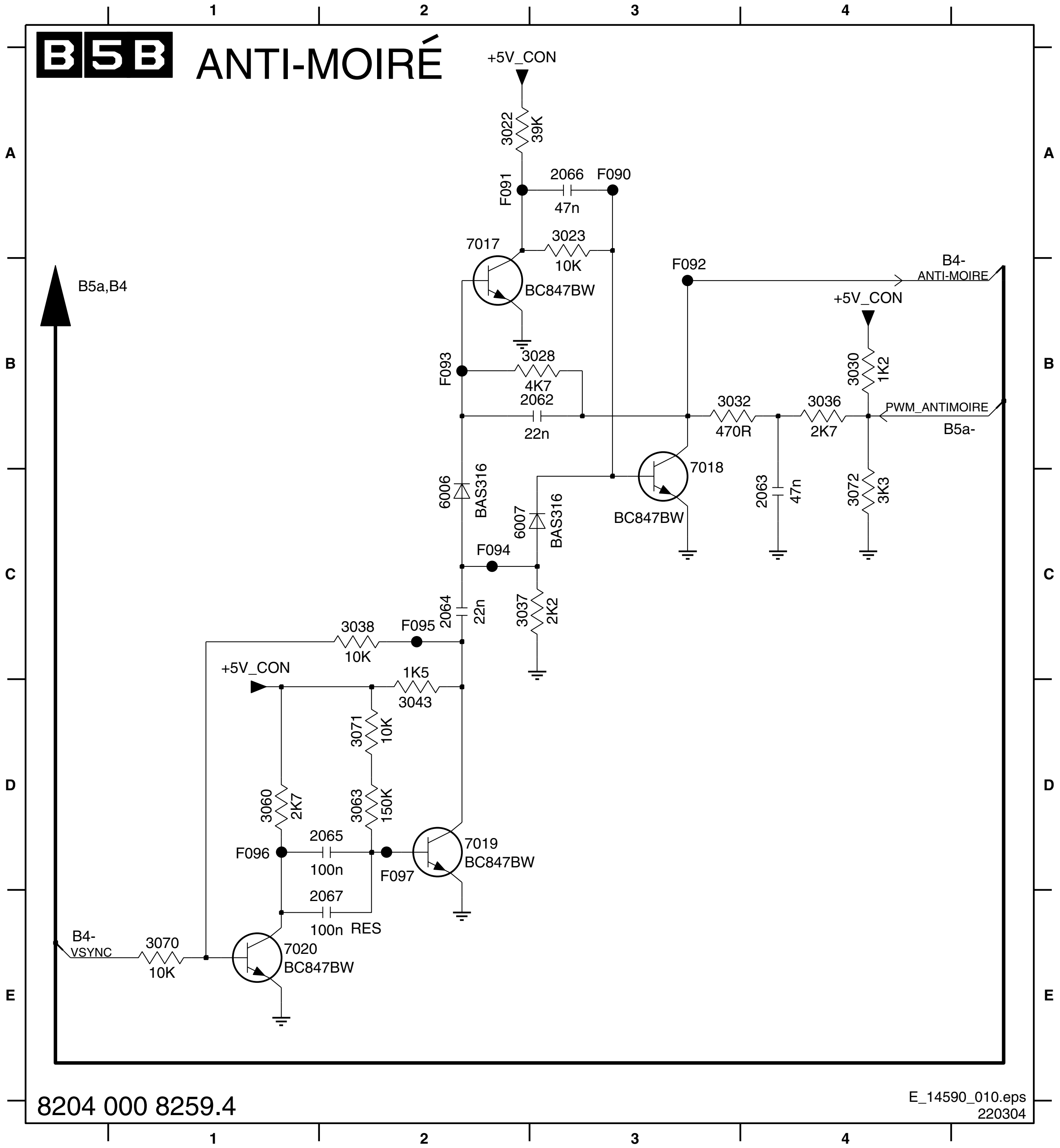
3040 I2
3041 I1
3042 J1
3044 E2
3045 J12
3046-A J12
3046-B J12
3046-C I13
3046-D I13
3047 C2
3048-A B7
3048-B D7
3048-C A7
3048-D D7
3049-A B7
3049-B C7
3049-C B7
3049-D C7
3050-A B7
3050-B C7
3050-C B7
3050-D C7
3051-A B7
3051-B C7
3051-C B7
3051-D C7
3052-A D7
3052-B D7
3052-C D7
3052-D C7
3053 D7
3054-A G7
3054-B E7
3054-C F7
3054-D F7
3055-A G7
3055-B E7
3055-C F7
3055-D F7
3056-A G7
3056-B E7
3056-C F7
3056-D F7
3057-A G7
3057-B E7
3057-C E7
3057-D F7
3058 C1
3059 C1
3061 E9
3062 A10
3064-A F3
3064-B E4
3064-C E3
3064-D E4
3065 G13
3066 G13
3067 H12
3068 A2
3069 E3
3073-A C4
3073-B C4
3073-C B4
3073-D B4
3074-A F2
3074-B F3
3074-C F3
3074-D A3
3075 C1
3076-A D4
3076-B D3
3076-C D3
3076-D D4
3077 D3
3078-B C4
3078-C A3
3078-D B3
3079 E3
3080 A1
3081 A4
3088 E3
3090-A C3
3090-B C4
3090-C C3
3090-D C4
3091 C2
3093 E12
3094 H1
3095 I1
3096 J1
3097 A3
3098 J11
3099-A B4
3099-B B4
3099-C A4

3099-D B4
6001 E2
6002 F12
6003 E3
6004 D2
6005 A4
7001 A6
7002 F12
7003 G13
7004 G13
7005 E13
7006 A10
7007 F10
7008 E1
7009 D3
7010 C3
7011 G2
7012 A12
7013 H13
7014 G13
7015 I2
7016 J2
9001 H2
9002 I1
9003 F1
9004 G1
9005 A4
9006 A3
9007 F12
9008 J10
9009 J12
9010 I12
9011 I12
9012 I12
9013 J12
9014 C1
9015 D1
9016 C2
F001 D9
F002 H3
F003 D9
F004 D7
F005 C9
F006 F9
F007 G9
F008 G9
F009 F9
F010 B9
F011 G9
F012 C9
F013 F9
F014 C7
F015 G9
F016 C7
F017 F9
F018 C7
F019 G9
F020 C9
F021 A9
F022 C9
F023 D9
F024 D9
F025 D9
F026 D11
F027 G11
F028 G11
F029 H11
F030 H11
F031 G11
F032 F11
F033 C11
F034 H11
F035 F11
F036 F11
F037 G11
F038 G11
F039 F11
F040 F11
F041 G11
F042 A4
F043 A3
F044 F1
F045 F3
F046 G3
F047 H4
F048 I8
F049 G12
F050 G13
F051 F13
F052 J6
F053 J1
F054 I9
F055 I9
F056 I8
F057 D7

F058 I10
F059 J10
F060 E9
F061 D11
F062 J10
F063 J10
F064 H3
F065 H4
F066 A10
F067 B3
F068 E1
F069 G8
F070 H7
F071 H8
F072 H9
F073 H9
F074 H9
F075 D11
F076 H12
F077 H13
F078 J13
F079 J11
F080 J13
F081 D1
F082 J13
F083 I3
F084 I13
F085 J13
F086 I13
F087 I13
F088 F4
F089 G12

Small Signal Board: Anti Moiré

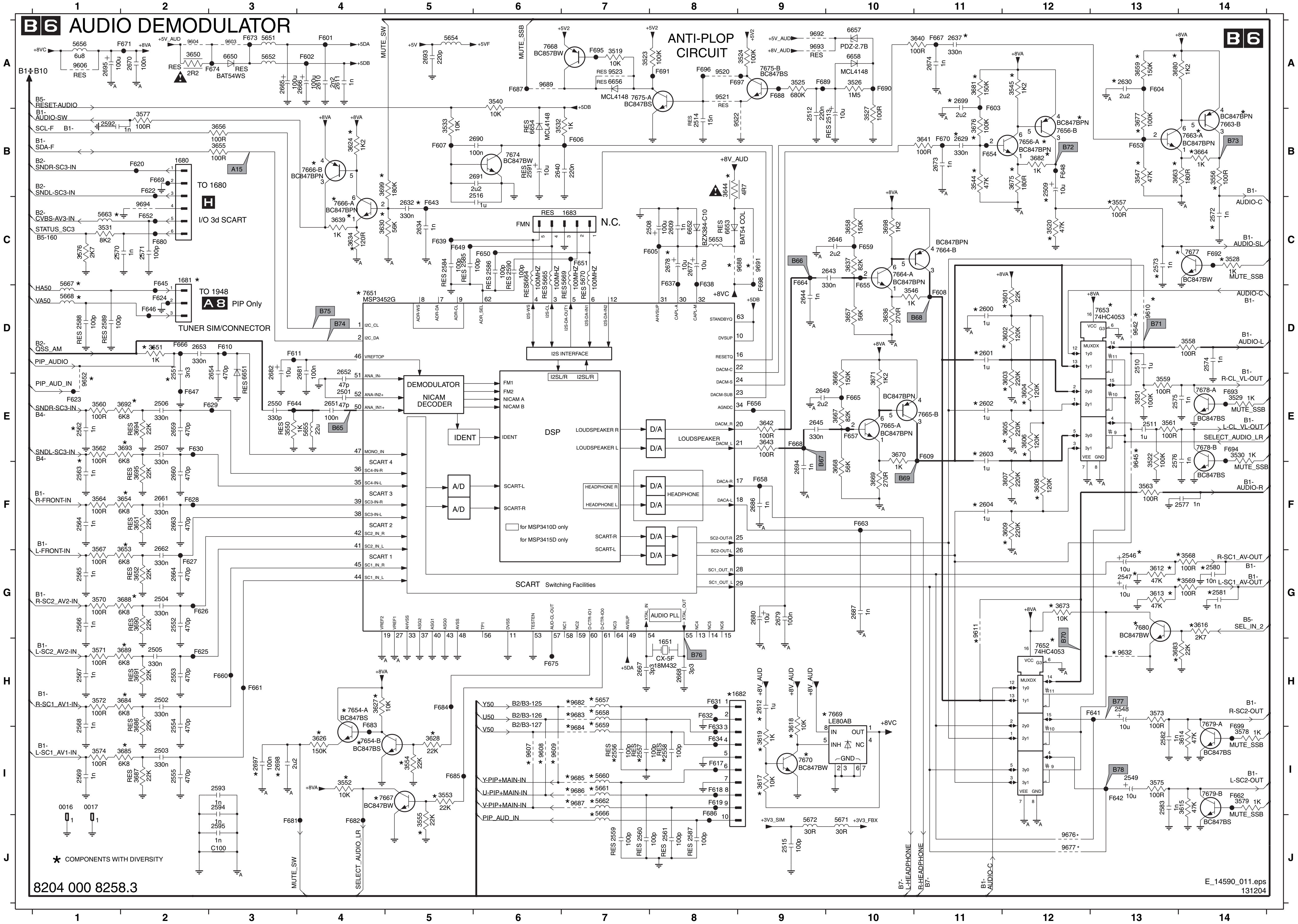
2062 B3	**2065 D2**	**3022 A2**	**3030 B4**	**3037 C2**	**3060 D1**	**3071 D2**	**6007 C2**	**7019 D2**	**F091 A2**	**F094 C2**	**F097 D2**
2063 C4	**2066 A3**	**3023 A3**	**3032 B3**	**3038 C2**	**3063 D2**	**3072 C4**	**7017 A2**	**7020 E1**	**F092 B3**	**F095 C2**	
2064 C2	**2067 E2**	**3028 B3**	**3036 B4**	**3043 D2**	**3070 E1**	**6006 C2**	**7018 C3**	**F090 A3**	**F093 B2**	**F096 D1**	


1
2
3
4
A
B
C
D
E
B5B
ANTI-MOIRÉ
+5V_CON
3022
39K
F091
2066
47n
F090
7017
3023
10K
BC847BW
F092
B4-
ANTI-MOIRE
B5a,B4
+5V_CON
3030
1K2
F093
3028
4K7
2062
22n
3032
470R
3036
2K7
PWM_ANTIMOIRE
B5a-
6006
BAS316
6007
BAS316
7018
BC847BW
2063
47n
3072
3K3
F094
2064
22n
3037
2K2
3038
10K
F095
+5V_CON
1K5
3043
3071
10K
3060
2K7
3063
150K
F096
2065
100n
F097
7019
BC847BW
2067
100n
RES
B4-
VSYNC
3070
10K
7020
BC847BW
8204 000 8259.4
E_14590_010.eps
220304

Personal Notes:

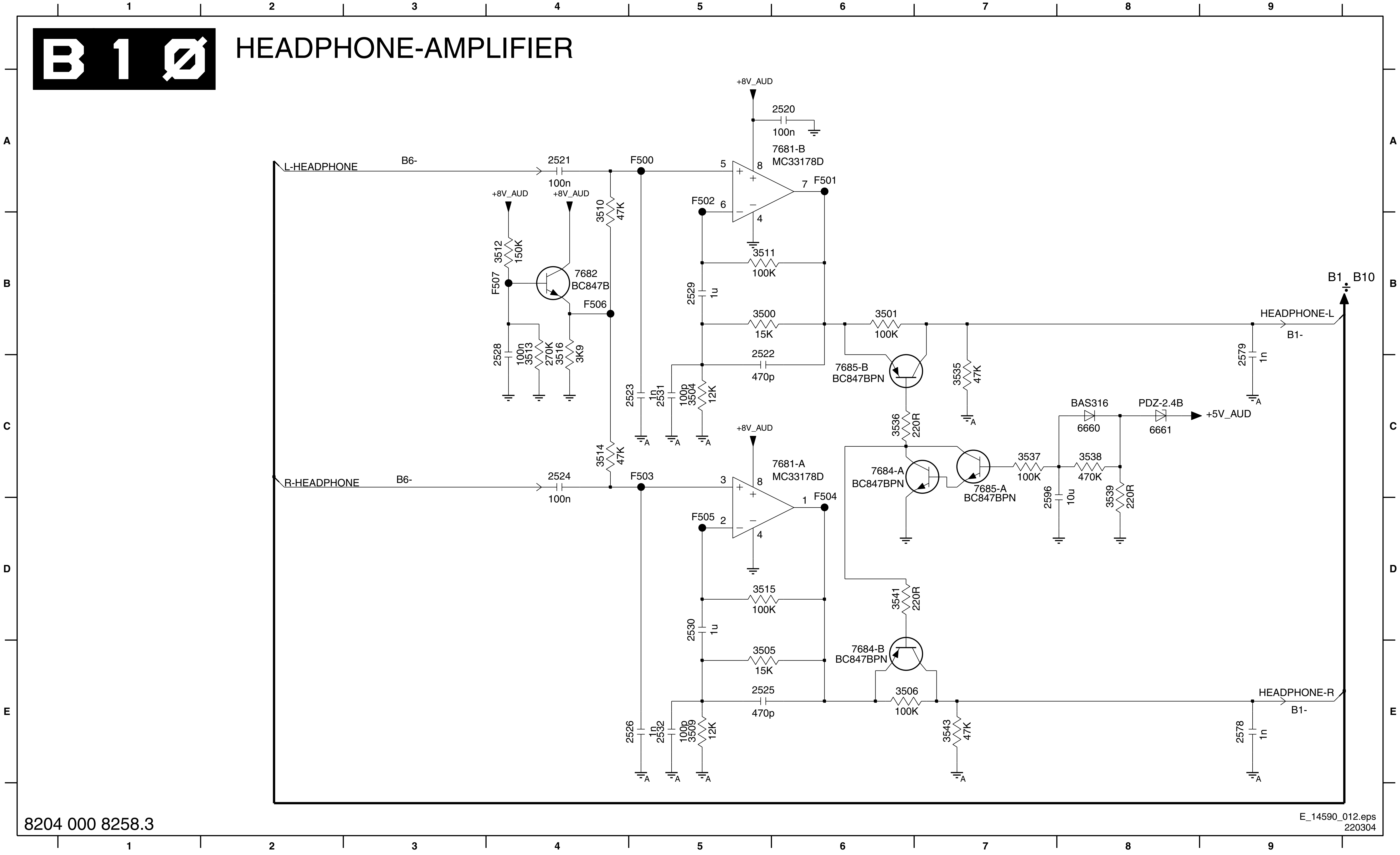
E_06532_012.eps
131004

Small Signal Board: Audio Demodulator


B6 AUDIO DEMODULATOR
B6
ANTI-PLOP CIRCUIT
B1÷B10
B5- RESET-AUDIO
B1- AUDIO-SW
SCL-F
B1- SDA-F
B2- SNDR-SC3-IN
B2- SNDL-SC3-IN
B2- CVBS-AV3-IN
STATUS_SC3
B5-160
TO 1680
H
I/O 3d SCART
HA50
VA50
TO 1948
A8
PIP Only
TUNER SIM/CONNECTOR
B2- QSS_AM
PIP_AUDIO
PIP_AUD_IN
SNDR-SC3-IN B4-
SNDL-SC3-IN B4-
B1- R-FRONT-IN
B1- L-FRONT-IN
B1- R-SC2_AV2-IN
B1- L-SC2_AV2-IN
B1- R-SC1_AV1-IN
B1- L-SC1_AV1-IN
7651 MSP3452G
DEMODULATOR
NICAM DECODER
IDENT
DSP
I2S INTERFACE
A/D
D/A
LOUDSPEAKER
HEADPHONE
SCART 1
SCART 2
SCART 3
SCART 4
for MSP3410D only
for MSP3415D only
SCART Switching Facilities
AUDIO PLL
CX-5F 18M432
N.C.
FMN
MUTE_SW
MUTE_SSB
SELECT_AUDIO_LR
7652 74HC4053
7653 74HC4053
7669 LE80AB
B1- AUDIO-C
B1- AUDIO-SL
B1- AUDIO-L
B1- AUDIO-R
B1- R-CL_VL-OUT
B1- L-CL_VL-OUT
R-SC1_AV-OUT
L-SC1_AV-OUT
B5- SEL_IN_2
B1- R-SC2-OUT
B1- L-SC2-OUT
B7- L-HEADPHONE
B7- R-HEADPHONE
B1- AUDIO-C
Y-PIP+MAIN-IN
U-PIP+MAIN-IN
V-PIP+MAIN-IN
PIP_AUD_IN
Y50
U50
V50
B2/B3-125
B2/B3-126
B2/B3-127
+3V3_SIM
+3V3_FBX
★ COMPONENTS WITH DIVERSITY
8204 000 8258.3
E_14590_011.eps
131204

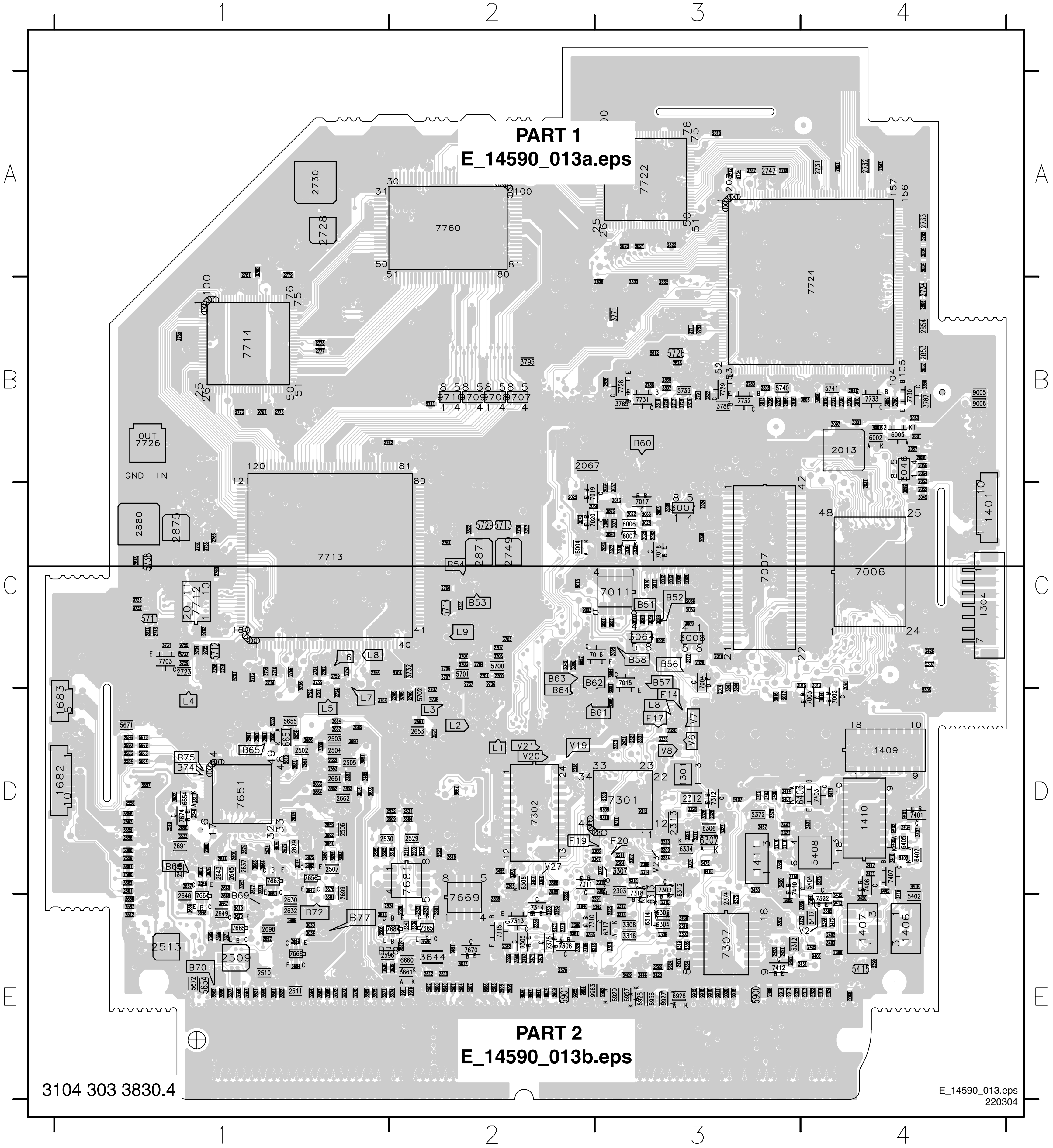
0016	I1
0017	I1
1651	H8
1680	B2
1681	C2
1682	H8
1683	C7
2501	E4
2502	H2
2503	I2
2504	G2
2505	H2
2506	E2
2507	E2
2508	C8
2509	B12
2510	D13
2511	E13
2512	B9
2513	B10
2514	B8
2515	J9
2516	C6
2546	G13
2547	G13
2548	H13
2549	I13
2550	E3
2551	D2
2552	G2
2553	H2
2554	H2
2555	I2
2556	I7
2557	I7
2558	I8
2559	J7
2560	J7
2561	J8
2562	E1
2563	F1
2564	F1
2565	G1
2566	G1
2567	H1
2568	H1
2569	I1
2570	C1
2571	C2
2572	C14
2573	C13
2574	D14
2575	E13
2576	E13
2577	F14
2580	G14
2581	G14
2582	I13
2583	I13
2584	C5
2585	C5
2586	C6
2587	J8
2588	D1
2589	D1
2590	C6
2591	B6
2592	B1
2593	I3
2594	I3
2595	J3
2600	D11
2601	D11
2602	E11
2603	E11
2604	F11
2609	C8
2610	A4
2611	A4
2612	H9
2629	B11
2630	A13
2632	C5
2634	C5
2637	A11
2640	B6
2643	C10
2644	D9
2645	E9
2646	C10
2649	E9
2651	E4
2652	E4
2653	D2
2654	D3
2659	E2
2660	F2
2661	F2
2662	G2
2663	F2
2664	G2
2665	A3
2666	A4
2667	H7
2668	H8
2670	A2
2673	B11
2674	A11
2677	C8
2678	C8
2679	G9
2680	G9
2681	D4
2682	D3
2686	F9
2687	G10
2690	B6
2691	B6
2693	A5
2694	F9
2695	A1
2697	I3
2698	I3
2699	A11
3519	A7
3520	C12
3521	E13
3522	E13
3523	A7
3524	A9
3525	A9
3526	A10
3527	B10
3528	C14
3529	E14
3530	E14
3531	C1
3532	B6
3533	B5
3540	A6
3544	B11
3545	A12
3546	D10
3547	B13
3550	E3
3551	D2
3552	I4
3553	I5
3554	I5
3555	J5
3556	B14
3557	C13
3558	D14
3559	E13
3560	E1
3561	E13
3562	E1
3563	F13
3564	F1
3567	G1
3568	G14
3569	G14
3570	G1
3571	H1
3572	H1
3573	H13
3574	I1
3575	I13
3576	C1
3577	B2
3578	I14
3579	I14
3601	D12
3602	D12
3603	E12
3604	E12
3605	E12
3606	E12
3607	F12
3608	F12
3609	F12
3612	G13
3613	G13
3614	I14
3615	I14
3616	G14
3617	I9
3618	H9
3619	I9
3624	B4
3626	I4
3627	H4
3628	I5
3630	C4
3634	C4
3636	D10
3637	C10
3639	C4
3640	A11
3641	B11
3642	E9
3643	E9
3644	B8
3650	A2
3651	F2
3652	G2
3653	G2
3654	F2
3655	B3
3656	B3
3657	D10
3658	C10
3659	A13
3663	B13
3664	B14
3666	E10
3667	E10
3668	F10
3669	F10
3670	E10
3671	E10
3673	G12
3675	B12
3676	B11
3677	B13
3680	A13
3681	A11
3682	B12
3683	H13
3684	H2
3685	I2
3686	H2
3687	I2
3688	G2
3689	H2
3690	G2
3691	H2
3692	E2
3693	E2
3694	E2
3695	F2
3698	C10
3699	B4
5651	A3
5652	A3
5653	C8
5654	A5
5655	E4
5656	A1
5657	H7
5658	H7
5659	I7
5660	I7
5661	I7
5662	I7
5663	C1
5664	C6
5665	C6
5666	J7
5667	D1
5668	D1
5669	C7
5670	C7
5671	J10
5672	J9
6650	A3
6651	D3
6652	C8
6653	C8
6654	B6
6656	A7
6657	A10
6658	A10
7651	D4
7652	H12
7653	D13
7654-A	H4
7654-B	I4
7656-A	B12
7656-B	B12
7663-A	B14
7663-B	B14
7664-A	C10
7664-B	C11
7665-A	E10
7665-B	E11
7666-A	C4
7666-B	B4
7667	I5
7668	A6
7669	H10
7670	I9
7674	B6
7675-A	A8
7675-B	A9
7677	C14
7678-A	E14
7678-B	E14
7679-A	H14
7679-B	I14
7680	G13
9520	A8
9521	A8
9522	B9
9523	A7
9603	A3
9604	A2
9606	A1
9607	I6
9608	I6
9609	I6
9610	D13
9611	G11
9632	H13
9642	D13
9645	E13
9652	E1
9676	J12
9677	J12
9682	H7
9683	H7
9684	I7
9685	I7
9686	I7
9687	I7
9688	C8
9689	A6
9691	C9
9692	A9
9693	A9
9694	C2
C100	J3
F601	A4
F602	A4
F603	B11
F604	A13
F605	C8
F606	B7
F607	B5
F608	D11
F609	E11
F610	D3
F611	D3
F617	I8
F618	I8
F619	I8
F620	B2
F622	B2
F623	E1
F624	D2
F625	H2
F626	G2
F627	G2
F628	F2
F629	E3
F630	E2
F631	H8
F632	H8
F633	I8
F634	I8
F637	C8
F638	C8
F639	C5
F641	H13
F642	I13
F643	C5
F644	E3
F645	D2
F646	D2
F647	E2
F648	B12
F649	C5
F650	C6
F651	C7
F652	C2
F653	B13
F654	B11
F655	D10
F656	E9
F657	E10
F658	F9
F659	C10
F660	H3
F661	H3
F662	I14
F663	F10
F664	C9
F665	E10
F666	D2
F667	A11
F668	E9
F669	B2
F670	B11
F671	A2
F673	A3
F674	A3
F675	H6
F680	C2
F681	J3
F682	J4
F683	I4
F684	H5
F685	I5
F686	J8
F687	A6
F688	A9
F689	A9
F690	A10
F691	A8
F692	C14
F693	E14
F694	E14
F695	A7
F696	A8
F697	A8
F698	C9
F699	I14

Small Signal Board: Headphone Amplifier


B10
HEADPHONE-AMPLIFIER
1 2 3 4 5 6 7 8 9
A B C D E
+8V_AUD
2520
100n
7681-B
MC33178D
L-HEADPHONE
B6-
2521
100n
F500
5
8
7
F501
F502
6
4
3510
47K
3512
150K
F507
7682
BC847B
F506
3511
100K
2529
1u
3500
15K
3501
100K
2522
470p
2528
100n
3513
270K
3516
3K9
2523
1n
2531
100p
3504
12K
7685-B
BC847BPN
3535
47K
3536
220R
HEADPHONE-L
B1-
2579
1n
B1
B10
BAS316
6660
PDZ-2.4B
6661
+5V_AUD
3514
47K
7681-A
MC33178D
R-HEADPHONE
2524
100n
F503
3
1
F504
F505
2
7684-A
BC847BPN
7685-A
BC847BPN
3537
100K
3538
470K
2596
10u
3539
220R
3515
100K
2530
1u
3541
220R
3505
15K
7684-B
BC847BPN
2525
470p
3506
100K
HEADPHONE-R
2526
1n
2532
100p
3509
12K
3543
47K
2578
1n
A
8204 000 8258.3
E_14590_012.eps
220304

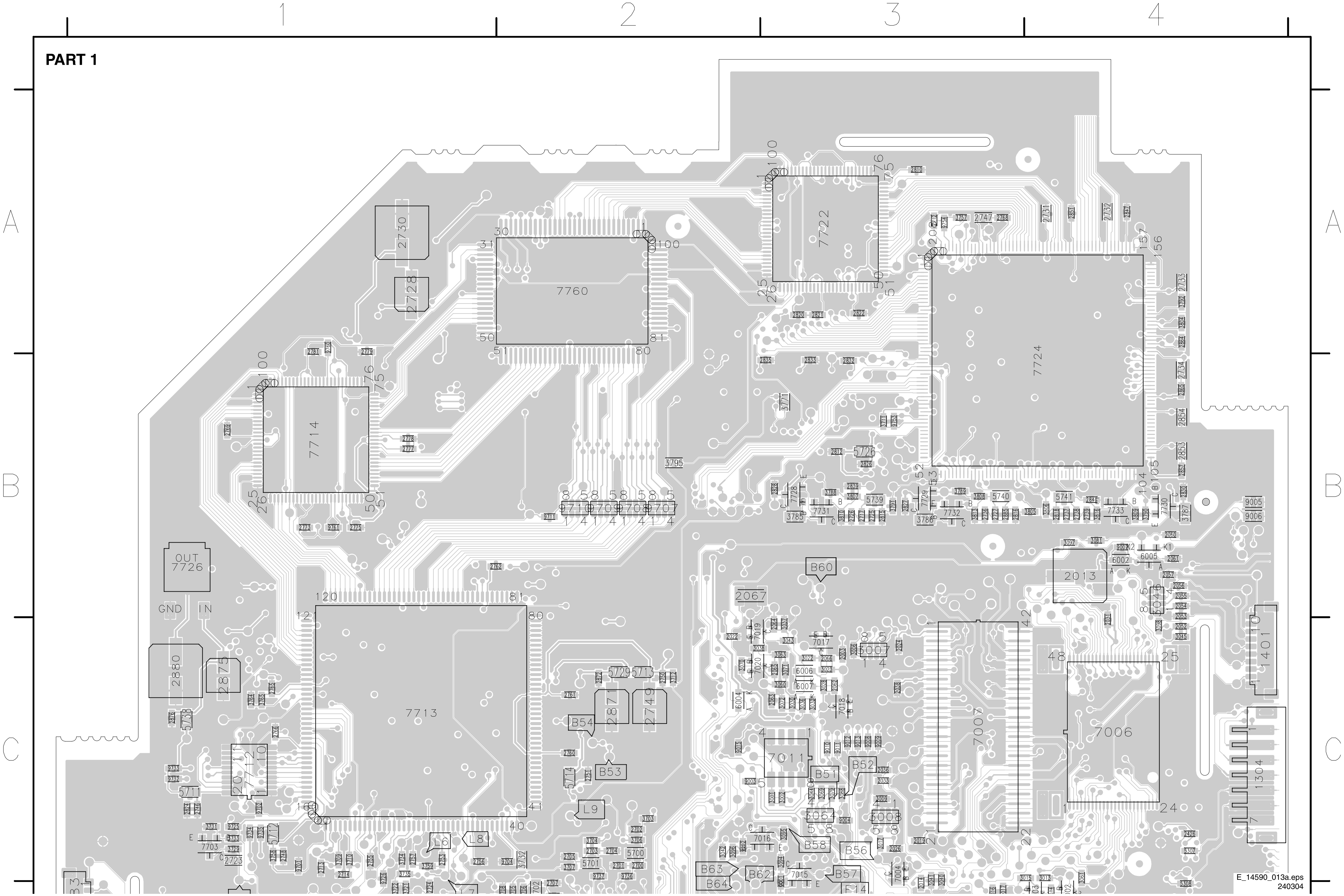
2520	A6
2521	A4
2522	C5
2523	C5
2524	C4
2525	E5
2526	E5
2528	B4
2529	B5
2530	D5
2531	C5
2532	E5
2578	E9
2579	B9
2596	C7
3500	B5
3501	B6
3504	C5
3505	E5
3506	E6
3509	E5
3510	A4
3511	B5
3512	B4
3513	B4
3514	C4
3515	D5
3516	B4
3535	C7
3536	C6
3537	C7
3538	C8
3539	C8
3541	D6
3543	E7
6660	C8
6661	C8
7681-A	C6
7681-B	A6
7682	B4
7684-A	C6
7684-B	E6
7685-A	C7
7685-B	C6
F500	A5
F501	A6
F502	A5
F503	C5
F504	D6
F505	D5
F506	B4
F507	B4

Layout Small Signal Board (Overview Top Side)

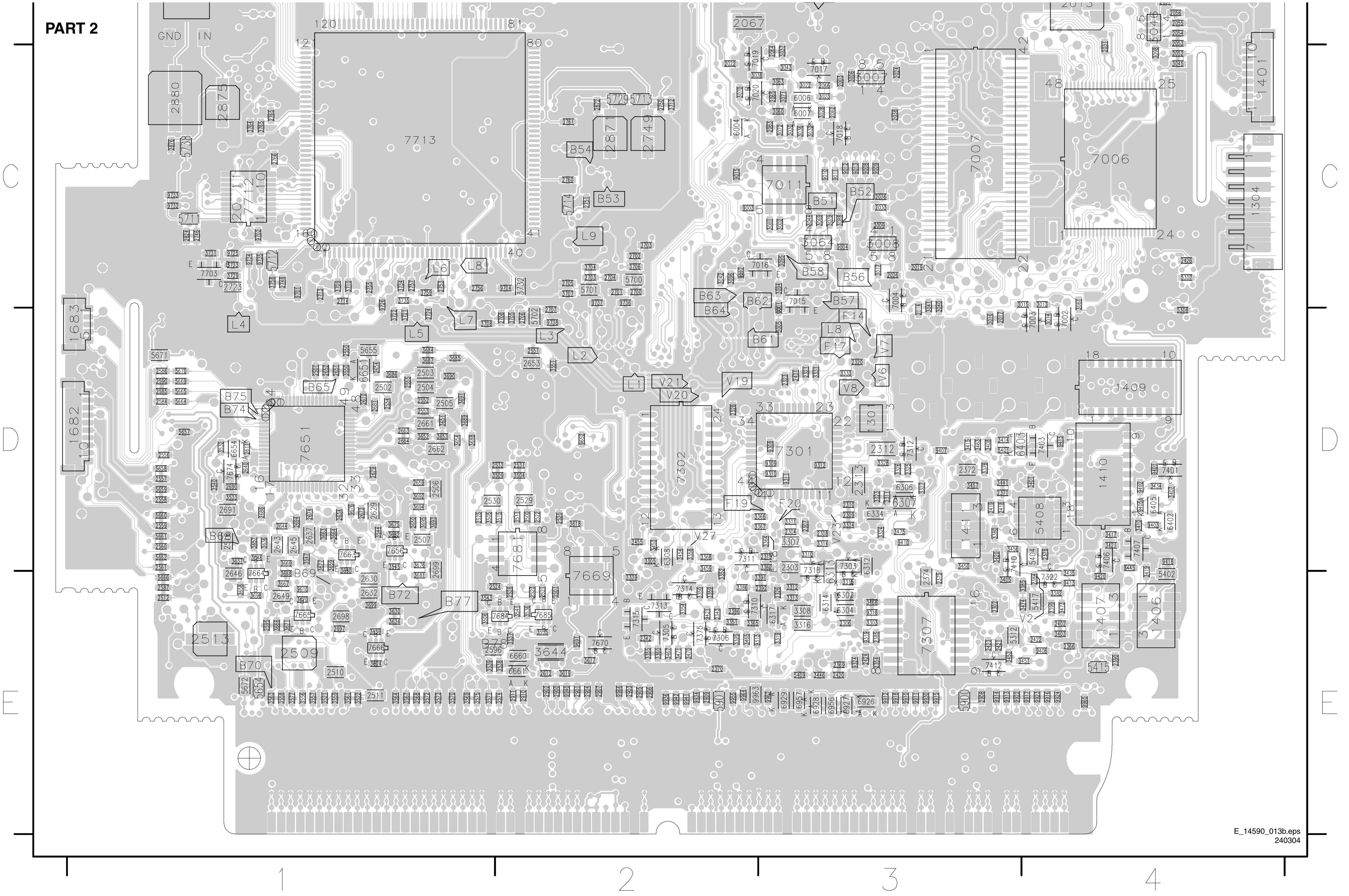


0009	E1
0010	E2
0011	E3
0012	E4
0013	E4
0014	D1
0015	B1
0016	D4
0017	C4
0018	A1
0019	A2
1000	E3
1001	B2
1303	C1
1305	D2
1306	D2
1307	D1
1308	D2
1402	B1
1403	E1
1408	D1
1651	D4
1680	D4
1681	D4
1701	C3
1702	C3
1710	B3
2001	B2
2002	B2
2004	B2
2005	B2
2006	B2
2007	B2
2008	B2
2009	C3
2010	C3
2011	C3
2012	C2
2016	B1
2020	B3
2023	B2
2025	C2
2027	C3
2028	C2
2029	C3
2034	C1
2035	C1
2037	C1
2039	C1
2040	C1
2058	B1
2059	B1
2301	D3
2305	D2
2314	D2
2315	D2
2316	D2
2317	D2
2318	D2
2322	D2
2324	E3
2327	D1
2329	D3
2330	D3
2331	D3
2332	D2
2333	E3
2334	D3
2335	E2
2336	D3
2337	E2
2338	E2
2339	D1
2340	D3
2344	C1
2345	C1
2346	C1
2347	C1
2348	C1
2349	D1
2350	E2
2351	E2
2352	E2
2353	E2
2355	D1
2356	D2
2357	D2
2358	D2
2359	D2
2360	D2
2361	D2
2362	D2
2363	D2
2364	D1
2365	E1
2367	E2
2368	E2
2373	E2
2376	D2
2377	D2
2379	D1
2380	D1
2381	D1
2382	D1
2383	D1
2387	D1
2388	E2
2389	E2
2391	E1
2393	E2
2394	D2
2395	D2
2396	D2
2397	D2
2398	D3
2401	D2
2403	D1
2404	D1
2405	D1
2406	D1
2407	D1
2408	D1
2409	D1
2411	D1
2412	D1
2413	E1
2417	D1
2425	E3
2427	C1
2428	D1
2429	D3
2508	E3
2514	E4
2515	E4
2528	D3
2546	E4
2547	E4
2548	E4
2549	E3
2562	D4
2563	D4
2564	E4
2565	E4
2566	E4
2567	E4
2568	E4
2569	E3
2570	D4
2571	D4
2572	E4
2573	E4
2574	E4
2575	E4
2576	E4
2577	E4
2578	E4
2579	E4
2580	E4
2581	E4
2582	E4
2583	E4
2588	D4
2589	D4
2591	D4
2592	E4
2593	D4
2594	E3
2600	D4
2601	E4
2602	E4
2603	E4
2604	D4
2609	E3
2665	D4
2666	D3
2667	D4
2668	D4
2670	D4
2677	D4
2678	E4
2680	D4
2682	D4
2687	D4
2693	E4
2695	D4
2709	A2
2710	A2
2711	B2
2715	A4
2716	B2
2718	C3
2719	C3
2720	C3
2721	C4
2722	D3
2729	B4
2735	B1
2740	C4
2741	C4
2742	C4
2743	C4
2744	C4
2745	C4
2752	C4
2754	A1
2758	C4
2759	C4
2763	B4
2764	C4
2767	B4
2770	C3
2771	C3
2772	C3
2774	A1
2776	A3
2780	A3
2782	A3
2783	B1
2784	B3
2785	A3
2786	A4
2787	A3
2788	A4
2789	A4
2790	A4
2791	A3
2792	A3
2793	A3
2794	A3
2795	B3
2796	B3
2799	A4
2800	C4
2801	A1
2802	C4
2803	B2
2804	B2
2805	B2
2806	B1
2807	A1
2808	A1
2809	A2
2811	A2
2813	A2
2814	B1
2817	A2
2823	C4
2825	A2
2829	B2
2831	C4
2838	B3
2840	B2
2843	B2
2845	A2
2846	A2
2848	A2
2855	B2
2859	B1
2860	B1
2861	A2
2866	B1
2867	B2
2870	C4
2874	B4
2877	C4
2878	D4
2879	B4
2881	C4
2884	A1
2886	B2
2887	B2
2888	B2
2889	B2
2890	B2
2891	B1
2892	B1
2893	B2
2894	B1
2895	B1
2896	B2
2897	B2
2898	B2
2899	B4
2912	E3
3003	B2
3004	D1
3010	C2
3011	C2
3012	C2
3018	C3
3019	C3
3020	C3
3021	C3
3024	B3
3025	B3
3026	B3
3027	B3
3029	C1
3031	C1
3033	B3
3034	C2
3035	C2
3039	B3
3047	B1
3048	C1
3049	C2
3050	C2
3051	C2
3052	C1
3053	C1
3054	C1
3055	C1
3056	B2
3057	B2
3058	B3
3059	C3
3062	C1
3065	C1
3066	D1
3067	D1
3068	C3
3073	C3
3074	C3
3075	C3
3076	C3
3077	C3
3078	C2
3080	C3
3090	C3
3091	B1
3093	C1
3099	C3
3301	E2
3302	D3
3304	D3
3306	E2
3317	E2
3318	D2
3320	D2
3321	D2
3322	E3
3329	E3
3330	D2
3332	D2
3335	D2
3336	E3
3337	D2
3338	E2
3340	D3
3341	D3
3342	E2
3343	E3
3344	D3
3345	E3
3346	E3
3347	E3
3348	E3
3349	D2
3353	E3
3356	D2
3357	E2
3361	D3
3363	D2
3370	E2
3371	E2
3372	E2
3373	D1
3374	D1
3375	D1
3376	D2
3377	D2
3379	D1
3381	D1
3383	E2
3384	E2
3387	D2
3388	E3
3389	D1
3390	E3
3393	D2
3394	D2
3395	D3
3396	D2
3397	D2
3398	D2
3399	E3
3400	E3
3402	D2
3404	E1
3406	D1
3409	D1
3411	D1
3412	D2
3416	E1
3418	D1
3423	E1
3433	D1
3436	E1
3437	D1
3439	E1
3442	E2
3443	E2
3444	E2
3447	E2
3448	E2
3449	E2
3460	D2
3461	D2
3462	D2
3472	E3
3510	D4
3512	D3
3513	D3
3514	D4
3516	D3
3519	E4
3520	E4
3523	E4
3524	E4
3525	E4
3526	D4
3527	D4
3528	E4
3529	E4
3530	E4
3531	D4
3552	E4
3553	D4
3554	D4
3555	E4
3560	D4
3562	D4
3576	D4
3578	D3
3579	D3
3601	E4
3602	E4
3603	E4
3604	E4
3605	E4
3606	D4
3607	D4
3608	D4
3609	D4
3612	E4
3613	E4
3614	E4
3615	E3
3616	E4
3626	D4
3627	D4
3628	D4
3640	D4
3641	D4
3642	D4
3643	D4
3650	D4
3655	D4
3656	D4
3673	E4
3683	E4
3701	B4
3713	C3
3714	C3
3715	D3
3716	C3
3717	C3
3718	C3
3719	C4
3720	C4
3725	C4
3726	D4
3727	C4
3728	D4
3730	D4
3736	C4
3737	C4
3738	C4
3739	C4
3741	B4
3742	B4
3743	B4
3744	C4
3745	C4
3746	B4
3747	C4
3748	C4
3749	C4
3750	B4
3751	C4
3752	C4
3753	C4
3754	C4
3755	B4
3756	C4
3760	C4
3762	B4
3763	B4
3772	A2
3773	A3
3774	A3
3775	A3
3776	A3
3777	A3
3778	A3
3779	A3
3780	A3
3781	A3
3782	A3
3783	A3
3784	A3
3793	C4
3794	A2
3796	C4
3797	C4
3800	B2
3801	B1
3802	B1
3803	B2
3811	B2
3812	B2
3814	B2
3815	B2
3817	B1
3818	B2
3819	B1
3820	B2
3821	B2
3822	B2
3823	B2
3824	B2
3825	B2
3826	B1
3827	B1
5301	D2
5302	D2
5303	C1
5304	C1
5305	C1
5306	C1
5309	C1
5310	C1
5311	D1
5403	D1
5405	D2
5406	E1
5411	D1
5416	E1
5651	D3
5652	D3
5653	E3
5656	D3
5663	D4
5667	D4
5668	D4
5705	B1
5706	B4
5707	A4
5710	C4
5716	B3
5722	B2
5723	A2
5724	B2
5725	B2
5727	A2
5728	A1
5731	B4
5733	D4
5736	C4
5737	B4
5742	C3
5743	A1
5744	C4
5745	C3
5750	B4
5751	C4
5902	E3
5903	E3
5904	E3
5910	E3
5911	E3
5912	E3
5913	E3
5914	E3
5915	E3
5917	E3
5918	E3
5919	E3
5920	E3
6001	B3
6003	B3
6301	E3
6302	C1
6309	D3
6310	E3
6311	E3
6316	E3
6319	D3
6320	C1
6321	C1
6322	C1
6404	D1
6650	D4
6652	D3
6653	E3
6656	E4
6657	E4
6658	E4
7001	B2
7005	B1
7008	B3
7009	B3
7010	B3
7012	C1
7013	C1
7014	D1
7304	D2
7308	D3
7309	D2
7319	E2
7320	E2
7323	D2
7340	E3
7361	D3
7362	D3
7402	E1
7404	D2
7405	D1
7408	E2
7409	E2
7411	E1
7413	D2
7652	D4
7653	D4
7654	D4
7667	D4
7668	E4
7675	E4
7677	E4
7678	E4
7679	D3
7680	E4
7682	D4
7701	C4
7702	C4
7706	A4
7707	C4
7708	C4
7709	C4
7710	B4
7711	C4
7715	C4
7720	A1
7723	A2
7725	C4
7727	B3
7750	B4
7751	B4
9014	C3
9016	C3
9302	D3
9303	D3
9304	D3
9305	D3
9314	D3
9315	D2
9316	E2
9322	E2
9408	E1
9412	E1
9414	E1
9416	D1
9417	E1
9419	E1
9520	E4
9521	E4
9522	E4
9523	E4
9603	D4
9604	D4
9606	E3
9607	D3
9608	D3
9609	D3
9611	E4
9632	E4
9642	E4
9645	D4
9677	D4
9682	D3
9683	D3
9684	D3
9685	D3
9686	D3
9687	D3
9688	E3
9689	E4
9692	D3
9693	D3
9694	D4
9700	C4
9703	C4
9730	C4
9731	C4
9740	B4
9741	B4
9744	A1
9745	A1
9746	A1
9747	A1
9750	B4
9762	A2
9763	A2
9764	B2
9765	B3
9766	B1
9768	A3
9769	C4
9770	C4
9771	B4
9780	C4
9781	B4
9901	E2
9902	E2
9903	E2
9904	E2
9905	E2
9906	E2
9907	E1
9908	E1
9909	E2
9919	E2
9920	E1
9921	E1
9925	E2
9927	E2
9928	E2
9929	E2
9935	E3
9937	E3
9938	E3
9939	E3
9944	E2
9945	E2
9946	E2
9947	E2
9948	E2
9949	E2
9950	E2
9951	E2
9952	E3
9953	E1
9954	E3

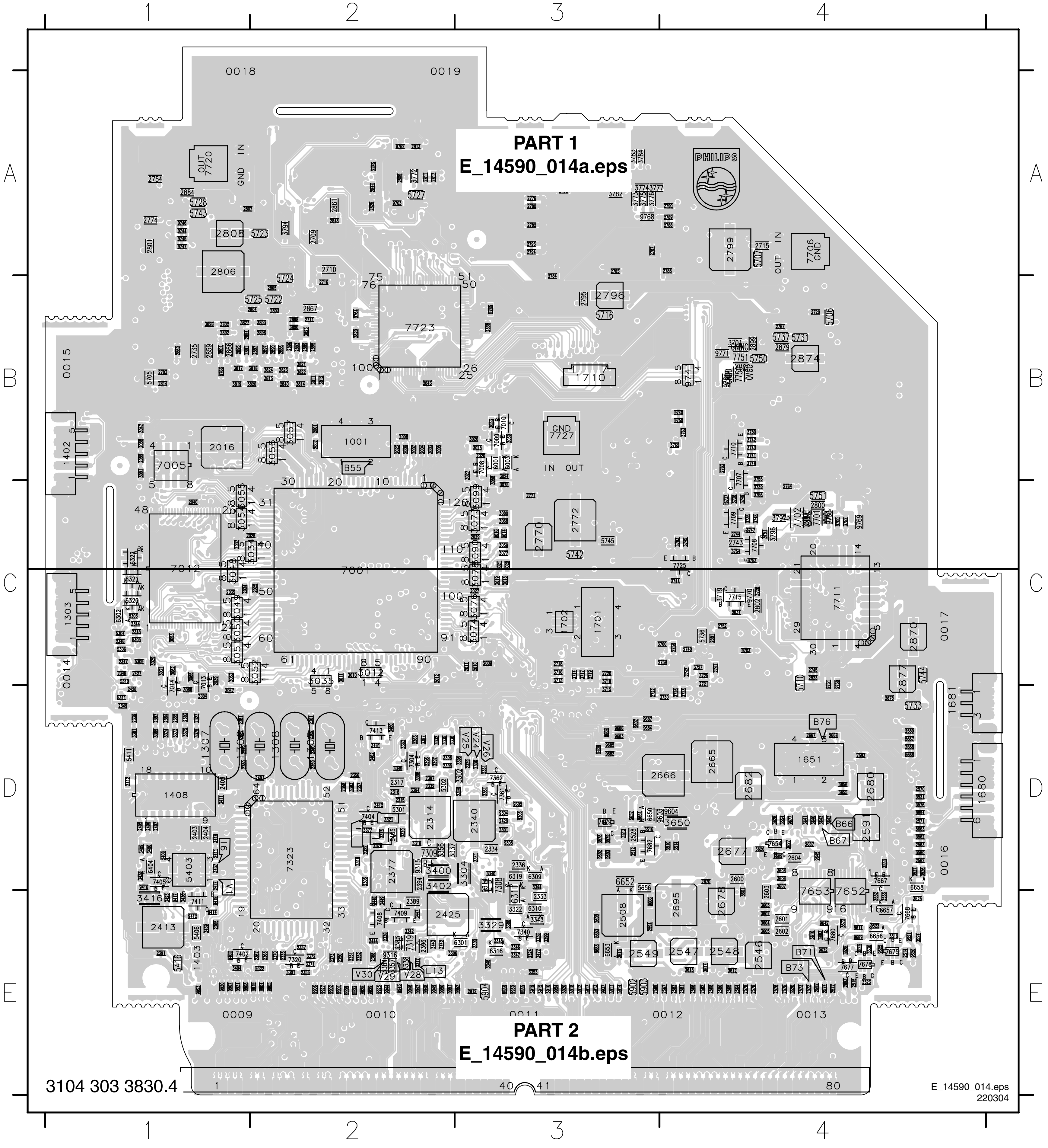
Layout Small Signal Board (Part 1 Top Side)


1
2
3
4
A
B
C
PART 1
7760
7722
7724
7714
7713
7007
7006
7011
7726
OUT
GND
IN
2730
2728
2880
2875
2871
2749
2067
2013
1401
1304
3795
3771
5726
5739
5740
5741
7728
7729
7730
7731
7732
7733
9710
9709
9708
9707
9005
9006
5007
6002
6005
6006
6007
7016
7017
7015
7018
7019
7020
3064
3008
5713
5729
5714
5711
5712
5738
7703
2723
5700
5701
B51
B52
B53
B54
B56
B57
B58
B60
B62
B63
B64
L6
L8
L9
E_14590_013a.eps
240304

Layout Small Signal Board (Part 2 Top Side)

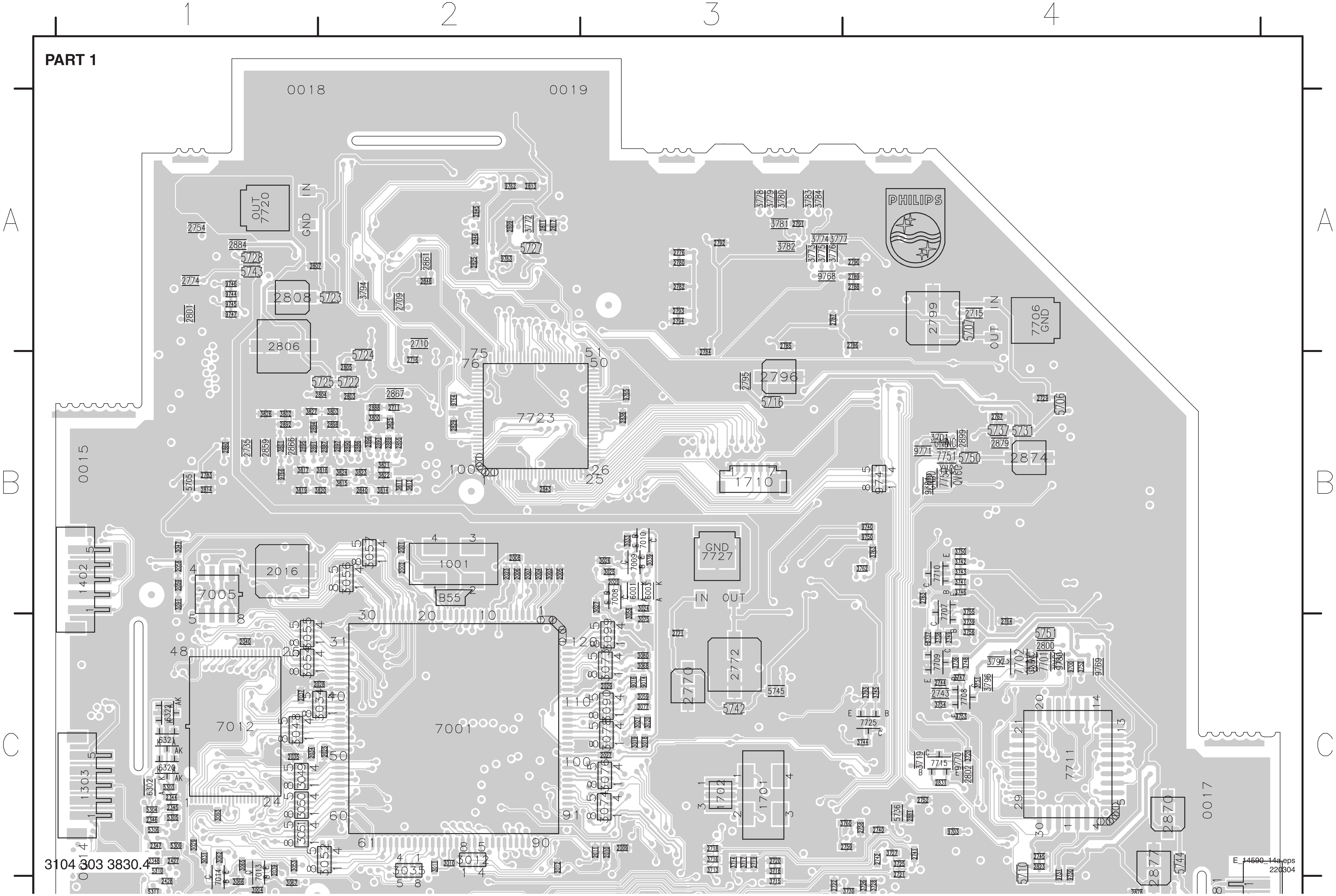

PART 2
GND
IN
2880
2875
7713
120
81
12
80
40
41
5729
5713
2871
2749
B54
B53
L9
7712
5711
7703
2723
L4
L6
L8
L7
L5
L3
L2
L1
5701
5700
5702
2067
7017
6007
6006
6004
7011
B51
B52
3064
3008
7016
B58
B56
B63
B64
B62
B57
7015
F14
L8
B61
F17
V7
V6
V8
7007
7006
48
25
24
42
22
21
1401
1304
2013
6046
1409
1683
1682
5671
5655
2653
2503
2504
2502
2505
2661
2662
B65
B75
B74
7651
V21
V20
V19
7302
7301
2312
2313
1301
1410
7401
7403
6403
2372
6306
6307
6334
F19
F20
V27
2307
2303
7303
7311
7318
6308
5408
1411
5404
7322
5402
1407
1406
7406
7307
5312
5415
7412
V2
2530
2529
7681
7669
2507
2630
2632
2698
2509
2513
2510
2511
B69
B72
B77
B70
B68
2646
2643
2645
2637
2649
2691
7665
7666
7664
7656
7684
7685
3644
6660
6661
7670
7313
7314
7305
7306
7310
3308
3316
6303
6304
6314
6317
2374
5300
5900
9963
6929
6928
6956
6927
6926
5672
5654
C
D
E
1
2
3
4
E_14590_013b.eps
240304

Layout Small Signal Board (Overview Bottom Side)

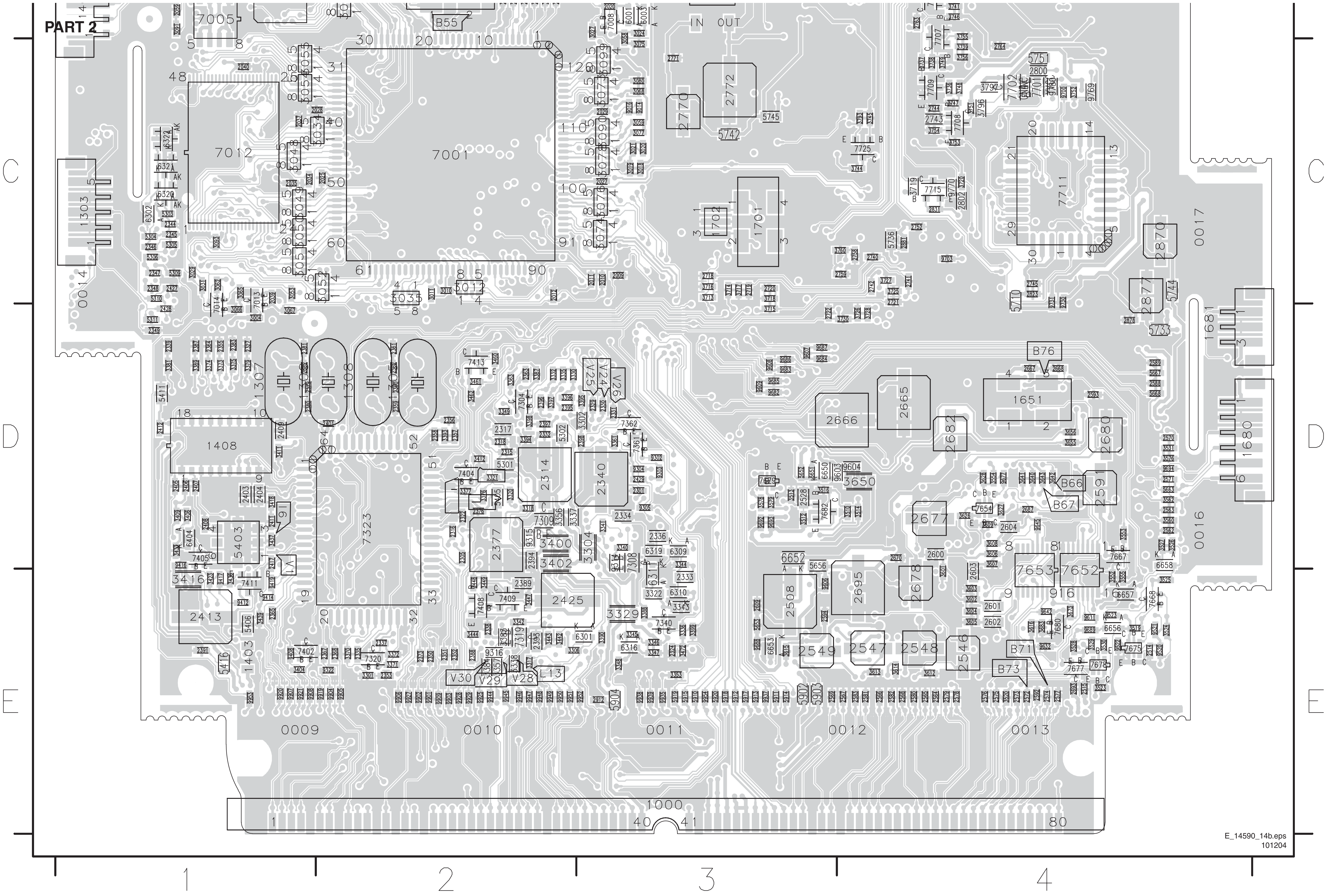


0009	E1	2355	D1	2601	E4	2843	B2	3317	E2	3526	D4	3778	A3	5920	E3	9417	E1
0010	E2	2356	D2	2602	E4	2845	A2	3318	D2	3527	D4	3779	A3	6001	B3	9419	E1
0011	E3	2357	D2	2603	E4	2846	A2	3320	D2	3528	E4	3780	A3	6003	B3	9520	E4
0012	E4	2358	D2	2604	D4	2848	A2	3321	D2	3529	E4	3781	A3	6301	E3	9521	E4
0013	E4	2359	D2	2609	E3	2855	B2	3322	E3	3530	E4	3782	A3	6302	C1	9522	E4
0014	D1	2360	D2	2665	D4	2859	B1	3329	E3	3531	D4	3783	A3	6309	D3	9523	E4
0015	B1	2361	D2	2666	D3	2860	B1	3330	D2	3552	E4	3784	A3	6310	E3	9603	D4
0016	D4	2362	D2	2667	D4	2861	A2	3332	D2	3553	D4	3793	C4	6311	E3	9604	D4
0017	C4	2363	D2	2668	D4	2866	B1	3335	D2	3554	D4	3794	A2	6316	E3	9606	E3
0018	A1	2364	D1	2670	D4	2867	B2	3336	E3	3555	E4	3796	C4	6319	D3	9607	D3
0019	A2	2365	E1	2677	D4	2870	C4	3337	D2	3560	D4	3797	C4	6320	C1	9608	D3
1000	E3	2367	E2	2678	E4	2874	B4	3338	E2	3562	D4	3800	B2	6321	C1	9609	D3
1001	B2	2368	E2	2680	D4	2877	C4	3340	D3	3576	D4	3801	B1	6322	C1	9611	E4
1303	C1	2373	E2	2682	D4	2878	D4	3341	D3	3578	D3	3802	B1	6404	D1	9632	E4
1305	D2	2376	D2	2687	D4	2879	B4	3342	E2	3579	D3	3803	B2	6650	D4	9642	E4
1306	D2	2377	D2	2693	E4	2881	C4	3343	E3	3601	E4	3811	B2	6652	D3	9645	D4
1307	D1	2379	D1	2695	D4	2884	A1	3344	D3	3602	E4	3812	B2	6653	E3	9677	D4
1308	D2	2380	D1	2709	A2	2886	B2	3345	E3	3603	E4	3814	B2	6656	E4	9682	D3
1402	B1	2381	D1	2710	A2	2887	B2	3346	E3	3604	E4	3815	B2	6657	E4	9683	D3
1403	E1	2382	D1	2711	B2	2888	B2	3347	E3	3605	E4	3817	B1	6658	E4	9684	D3
1408	D1	2383	D1	2715	A4	2889	B2	3348	E3	3606	D4	3818	B2	7001	B2	9685	D3
1651	D4	2387	D1	2716	B2	2890	B2	3349	D2	3607	D4	3819	B1	7005	B1	9686	D3
1680	D4	2388	E2	2718	C3	2891	B1	3353	E3	3608	D4	3820	B2	7008	B3	9687	D3
1681	D4	2389	E2	2719	C3	2892	B1	3356	D2	3609	D4	3821	B2	7009	B3	9688	E3
1701	C3	2391	E1	2720	C3	2893	B2	3357	E2	3612	E4	3822	B2	7010	B3	9689	E4
1702	C3	2393	E2	2721	C4	2894	B1	3361	D3	3613	E4	3823	B2	7012	C1	9692	D3
1710	B3	2394	D2	2722	D3	2895	B1	3363	D2	3614	E4	3824	B2	7013	C1	9693	D3
2001	B2	2395	D2	2729	B4	2896	B2	3370	E2	3615	E3	3825	B2	7014	D1	9694	D4
2002	B2	2396	D2	2735	B1	2897	B2	3371	E2	3616	E4	3826	B1	7304	D2	9700	C4
2004	B2	2397	D2	2740	C4	2898	B2	3372	E2	3626	D4	3827	B1	7308	D3	9703	C4
2005	B2	2398	D3	2741	C4	2899	B4	3373	D1	3627	D4	5301	D2	7309	D2	9730	C4
2006	B2	2401	D2	2742	C4	2912	E3	3374	D1	3628	D4	5302	D2	7319	E2	9731	C4
2007	B2	2403	D1	2743	C4	3003	B2	3375	D1	3640	D4	5303	C1	7320	E2	9740	B4
2008	B2	2404	D1	2744	C4	3004	D1	3376	D2	3641	D4	5304	C1	7323	D2	9741	B4
2009	C3	2405	D1	2745	C4	3010	C2	3377	D2	3642	D4	5305	C1	7340	E3	9744	A1
2010	C3	2406	D1	2752	C4	3011	C2	3379	D1	3643	D4	5306	C1	7361	D3	9745	A1
2011	C3	2407	D1	2754	A1	3012	C2	3381	D1	3650	D4	5309	C1	7362	D3	9746	A1
2012	C2	2408	D1	2758	C4	3018	C3	3383	E2	3655	D4	5310	C1	7402	E1	9747	A1
2016	B1	2409	D1	2759	C4	3019	C3	3384	E2	3656	D4	5311	D1	7404	D2	9750	B4
2020	B3	2411	D1	2763	B4	3020	C3	3387	D2	3673	E4	5403	D1	7405	D1	9762	A2
2023	B2	2412	D1	2764	C4	3021	C3	3388	E3	3683	E4	5405	D2	7408	E2	9763	A2
2025	C2	2413	E1	2767	B4	3024	B3	3389	D1	3701	B4	5406	E1	7409	E2	9764	B2
2027	C3	2417	D1	2770	C3	3025	B3	3390	E3	3713	C3	5411	D1	7411	E1	9765	B3
2028	C2	2425	E3	2771	C3	3026	B3	3393	D2	3714	C3	5416	E1	7413	D2	9766	B1
2029	C3	2427	C1	2772	C3	3027	B3	3394	D2	3715	D3	5651	D3	7652	D4	9768	A3
2034	C1	2428	D1	2774	A1	3029	C1	3395	D3	3716	C3	5652	D3	7653	D4	9769	C4
2035	C1	2429	D3	2776	A3	3031	C1	3396	D2	3717	C3	5653	E3	7654	D4	9770	C4
2037	C1	2508	E3	2780	A3	3033	B3	3397	D2	3718	C3	5656	D3	7667	D4	9771	B4
2039	C1	2514	E4	2782	A3	3034	C2	3398	D2	3719	C4	5663	D4	7668	E4	9780	C4
2040	C1	2515	E4	2783	B1	3035	C2	3399	E3	3720	C4	5667	D4	7675	E4	9781	B4
2058	B1	2528	D3	2784	B3	3039	B3	3400	E3	3725	C4	5668	D4	7677	E4	9901	E2
2059	B1	2546	E4	2785	A3	3047	B1	3402	D2	3726	D4	5705	B1	7678	E4	9902	E2
2301	D3	2547	E4	2786	A4	3048	C1	3404	E1	3727	C4	5706	B4	7679	D3	9903	E2
2305	D2	2548	E4	2787	A3	3049	C2	3406	D1	3728	D4	5707	A4	7680	E4	9904	E2
2314	D2	2549	E3	2788	A4	3050	C2	3409	D1	3730	D4	5710	C4	7682	D4	9905	E2
2315	D2	2562	D4	2789	A4	3051	C2	3411	D1	3736	C4	5716	B3	7701	C4	9906	E2
2316	D2	2563	D4	2790	A4	3052	C1	3412	D2	3737	C4	5722	B2	7702	C4	9907	E1
2317	D2	2564	E4	2791	A3	3053	C1	3416	E1	3738	C4	5723	A2	7706	A4	9908	E1
2318	D2	2565	E4	2792	A3	3054	C1	3418	D1	3739	C4	5724	B2	7707	C4	9909	E2
2322	D2	2566	E4	2793	A3	3055	C1	3423	E1	3741	B4	5725	B2	7708	C4	9919	E2
2324	E3	2567	E4	2794	A3	3056	B2	3433	D1	3742	B4	5727	A2	7709	C4	9920	E1
2327	D1	2568	E4	2795	B3	3057	B2	3436	E1	3743	B4	5728	A1	7710	B4	9921	E1
2329	D3	2569	E3	2796	B3	3058	B3	3437	D1	3744	C4	5731	B4	7711	C4	9925	E2
2330	D3	2570	D4	2799	A4	3059	C3	3439	E1	3745	C4	5733	D4	7715	C4	9927	E2
2331	D3	2571	D4	2800	C4	3062	C1	3442	E2	3746	B4	5736	C4	7720	A1	9928	E2
2332	D2	2572	E4	2801	A1	3065	C1	3443	E2	3747	C4	5737	B4	7723	A2	9929	E2
2333	E3	2573	E4	2802	C4	3066	D1	3444	E2	3748	C4	5742	C3	7725	C4	9935	E3
2334	D3	2574	E4	2803	B2	3067	D1	3447	E2	3749	C4	5743	A1	7727	B3	9937	E3
2335	E2	2575	E4	2804	B2	3068	C3	3448	E2	3750	B4	5744	C4	7750	B4	9938	E3
2336	D3	2576	E4	2805	B2	3073	C3	3449	E2	3751	C4	5745	C3	7751	B4	9939	E3
2337	E2	2577	E4	2806	B1	3074	C3	3460	D2	3752	C4	5750	B4	9014	C3	9944	E2
2338	E2	2578	E4	2807	A1	3075	C3	3461	D2	3753	C4	5751	C4	9016	C3	9945	E2
2339	D1	2579	E4	2808	A1	3076	C3	3462	D2	3754	C4	5902	E3	9302	D3	9946	E2
2340	D3	2580	E4	2809	A2	3077	C3	3472	E3	3755	B4	5903	E3	9303	D3	9947	E2
2344	C1	2581	E4	2811	A2	3078	C2	3510	D4	3756	C4	5904	E3	9304	D3	9948	E2
2345	C1	2582	E4	2813	A2	3080	C3	3512	D3	3760	C4	5910	E3	9305	D3	9949	E2
2346	C1	2583	E4	2814	B1	3090	C3	3513	D3	3762	B4	5911	E3	9314	D3	9950	E2
2347	C1	2588	D4	2817	A2	3091	B1	3514	D4	3763	B4	5912	E3	9315	D2	9951	E2
2348	C1	2589	D4	2823	C4	3093	C1	3516	D3	3772	A2	5913	E3	9316	E2	9952	E3
2349	D1	2591	D4	2825	A2	3099	C3	3519	E4	3773	A3	5914	E3	9322	E2	9953	E1
2350	E2	2592	E4	2829	B2	3301	E2	3520	E4	3774	A3	5915	E3	9408	E1	9954	E3
2351	E2	2593	D4	2831	C4	3302	D3	3523	E4	3775	A3	5917	E3	9412	E1		
2352	E2	2594	E3	2838	B3	3304	D3	3524	E4	3776	A3	5918	E3	9414	E1		
2353	E2	2600	D4	2840	B2	3306	E2	3525	E4	3777	A3	5919	E3	9416	D1		

Layout Small Signal Board (Part 1 Bottom Side)


1
2
3
4
A
B
C
PART 1
0018
0019
0015
0017
PHILIPS
OUT
7720
GND
IN
2754
2884
5728
5743
2774
2801
2808
5723
2806
3794
2709
2861
5727
3772
2710
5724
5725
5722
2867
7723
75
76
51
50
100
26
25
3778
3779
3780
3783
3784
3781
3782
3774
3777
3773
3775
3776
9768
2799
2715
5707
7706
2796
2795
5716
1710
5706
3701
2899
5737
5731
2879
9771
7751
5750
2874
1402
2016
7005
4
5
8
1001
B55
5057
5056
7012
48
25
24
1
7001
30
20
10
31
126
110
100
91
61
60
50
40
90
3035
3012
3104 303 3830.4
GND
7727
IN
OUT
2770
2772
5745
5742
1702
1701
7725
7715
7711
20
14
21
13
29
30
5751
2800
7702
7701
3797
3796
9769
2743
2870
2877
5744
5736
5710
1303
7013
7014
E_14590_14a.eps
220304

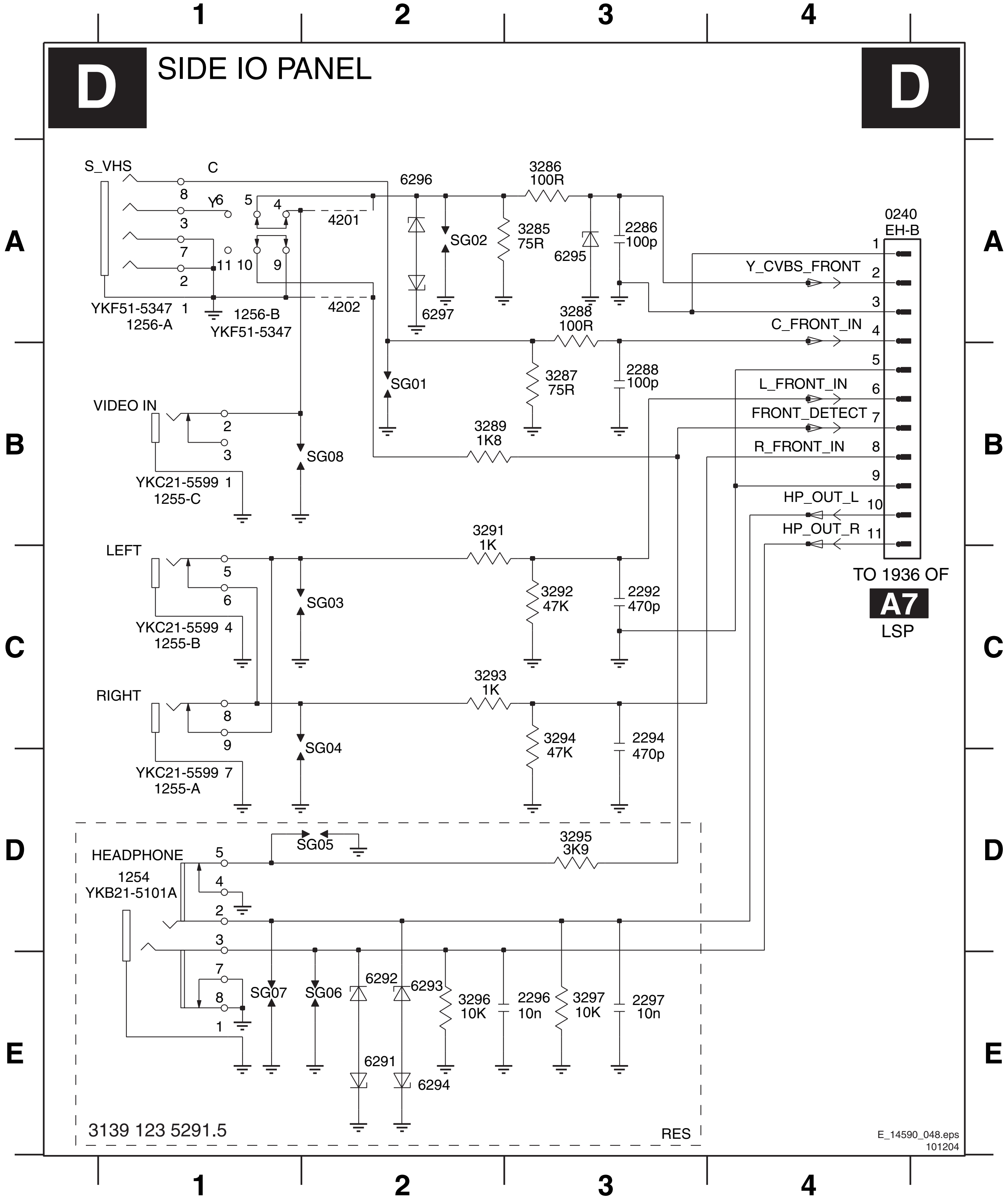
Layout Small Signal Board (Part 2 Bottom Side)


PART 2
C
D
E
1
2
3
4
7005
B55
IN OUT
7012
7001
1303
0014
2772
2770
5745
5742
7725
1702
1701
7715
7711
2870
0017
2877
5744
5733
1681
1680
B76
1651
2666
2665
2682
2680
1408
1307
1308
7323
2314
2340
2377
3400
3402
3304
2425
3329
5403
2413
1403
5416
3650
2591
B66
B67
2677
7653
7652
2508
2695
2678
6652
2549
2547
2548
2546
B71
B73
V25
V24
V26
V30
V29
V28
L13
0016
0009
0010
0011
0012
0013
1000
1
40
41
80

E_14590_14b.eps
101204

Side I/O Panel (PV02 Styling)

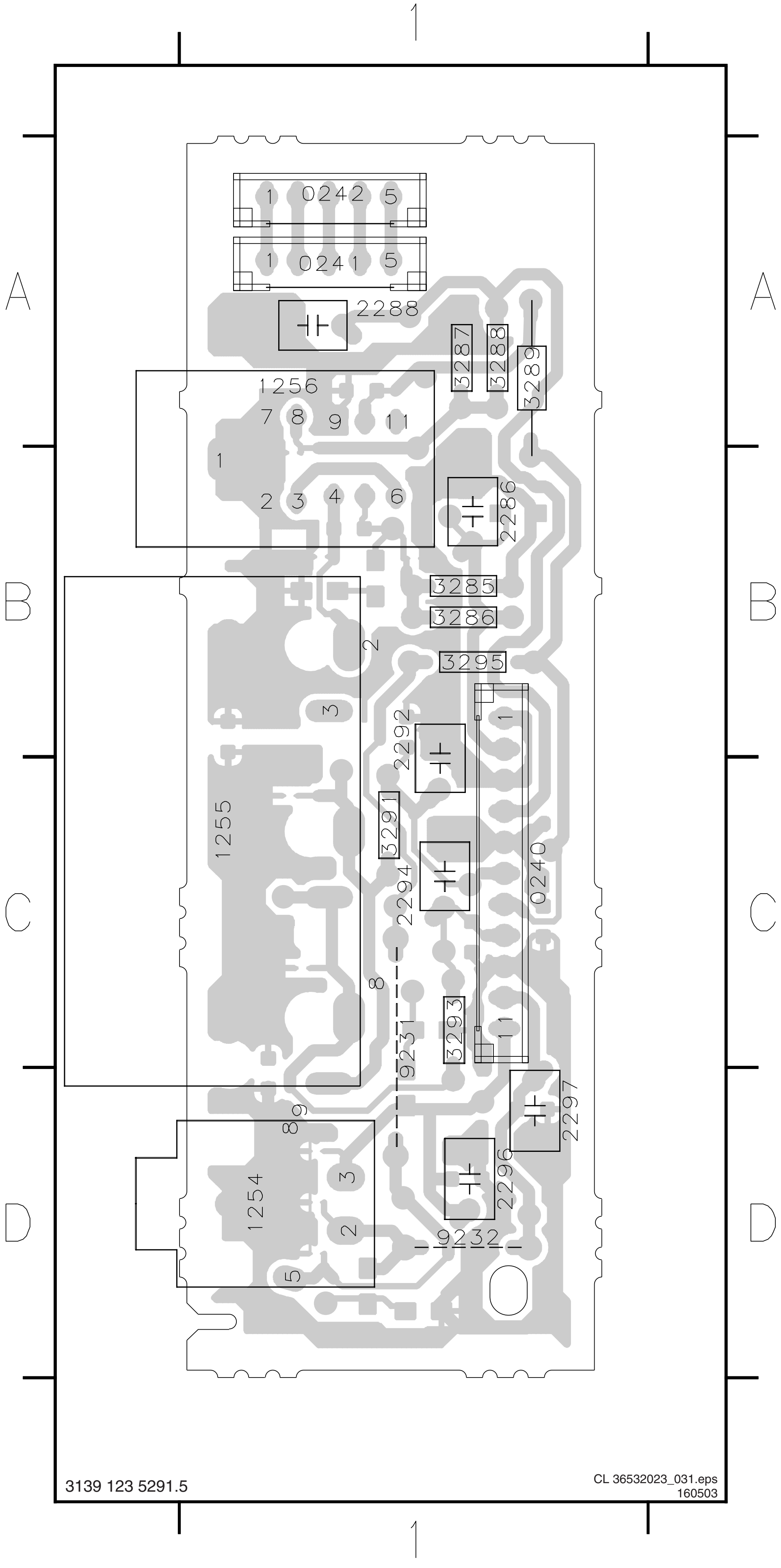
0240	A4
0241	C4
0242	C4
1254	D1
1255-A	D1
1255-B	C1
1255-C	B1
1256-A	A1
1256-B	A1
2286	A3
2288	B3
2292	C3
2294	C3
2296	E3
2297	E3
3285	A3
3286	A3
3287	B3
3288	A3
3289	B2
3291	B2
3292	C3
3293	C2
3294	C3
3295	D3
3296	E2
3297	E3
4201	A2
4202	A2
6291	E2
6292	E2
6293	E2
6294	E2
6295	A3
6296	A2
6297	A2
I201	A2
I202	A4
I203	A2
I204	A4
I205	B2
I206	B4
I208	C2
I209	B4
I210	B4
I211	D2
I213	D2
I215	D2
I217	A1
I218	B2
I219	D3
I220	E2
I221	E2
I222	E2
SG01	B2
SG02	A2
SG03	C2
SG04	D2
SG05	D2
SG06	E2
SG07	E1
SG08	B2


1
2
3
4
A
B
C
D
E
D
SIDE IO PANEL
D
S_VHS
C
Y
8
6
5
4
3
7
11 10
9
2
4201
4202
YKF51-5347 1
1256-A
1256-B
YKF51-5347
6296
SG02
6297
3286
100R
3285
75R
6295
2286
100p
3288
100R
3287
75R
2288
100p
SG01
3289
1K8
VIDEO IN
2
3
YKC21-5599 1
1255-C
SG08
LEFT
5
6
YKC21-5599 4
1255-B
SG03
3291
1K
3292
47K
2292
470p
RIGHT
8
9
YKC21-5599 7
1255-A
SG04
3293
1K
3294
47K
2294
470p
HEADPHONE
1254
YKB21-5101A
5
4
2
3
7
8
1
SG05
3295
3K9
SG07
SG06
6292
6293
3296
10K
2296
10n
3297
10K
2297
10n
6291
6294
3139 123 5291.5
RES
0240
EH-B
1
Y_CVBS_FRONT 2
3
C_FRONT_IN 4
5
L_FRONT_IN 6
FRONT_DETECT 7
R_FRONT_IN 8
9
HP_OUT_L 10
HP_OUT_R 11
TO 1936 OF
A7
LSP
E_14590_048.eps
101204

Personal Notes:

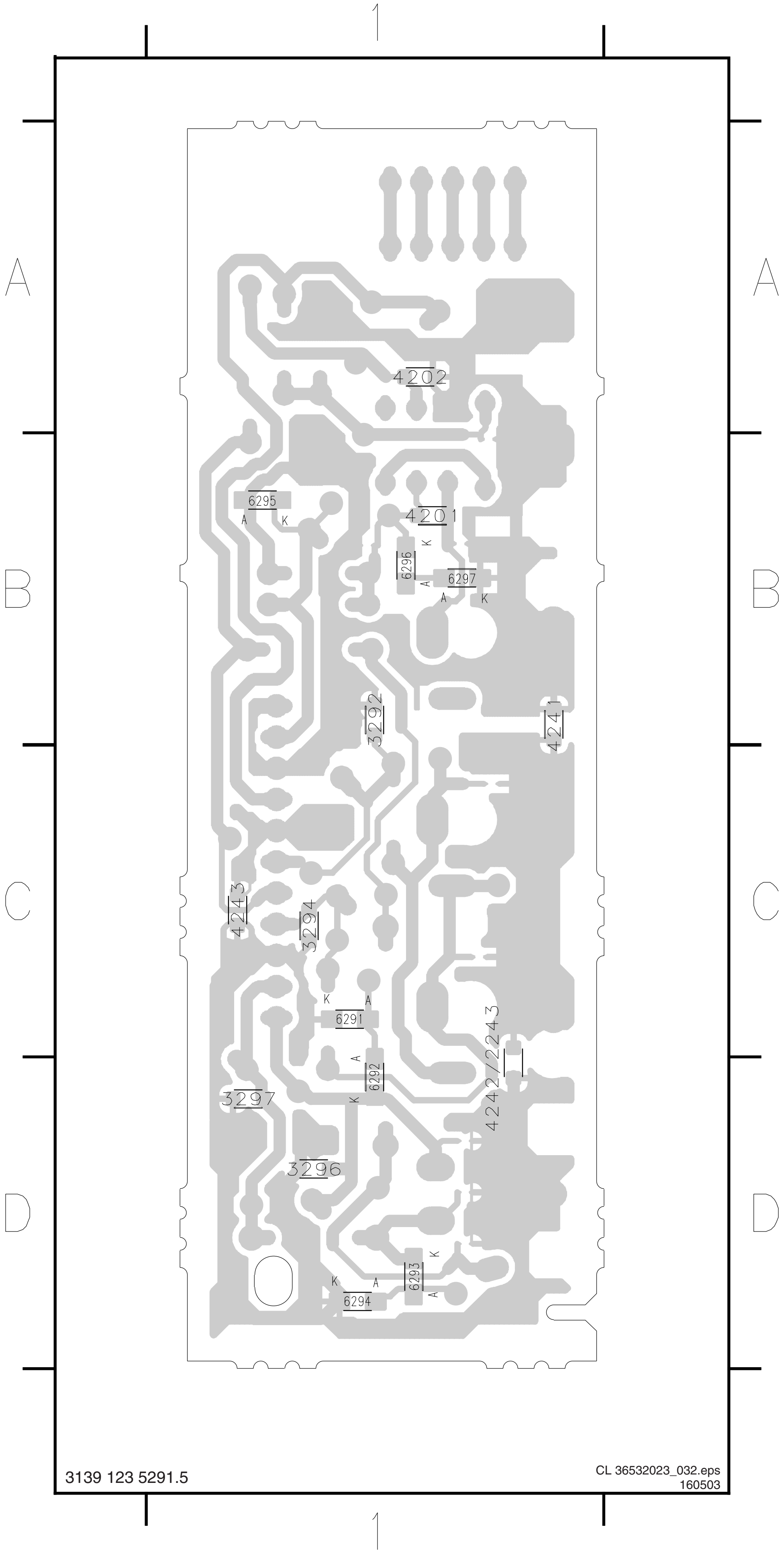
E_06532_012.eps
131004

Layout Side I/O Panel (PV02 Styling) (Top Side)


1
A
B
C
D
0242
0241
2288
3287
3288
3289
1256
7 8 9 11
1
2 3 4 6
2286
3285
3286
3295
1255
2
3
2292
3291
2294
0240
8
9231
3293
11
2297
8 9
3
1254
2
5
2296
9232
3139 123 5291.5
CL 36532023_031.eps
160503

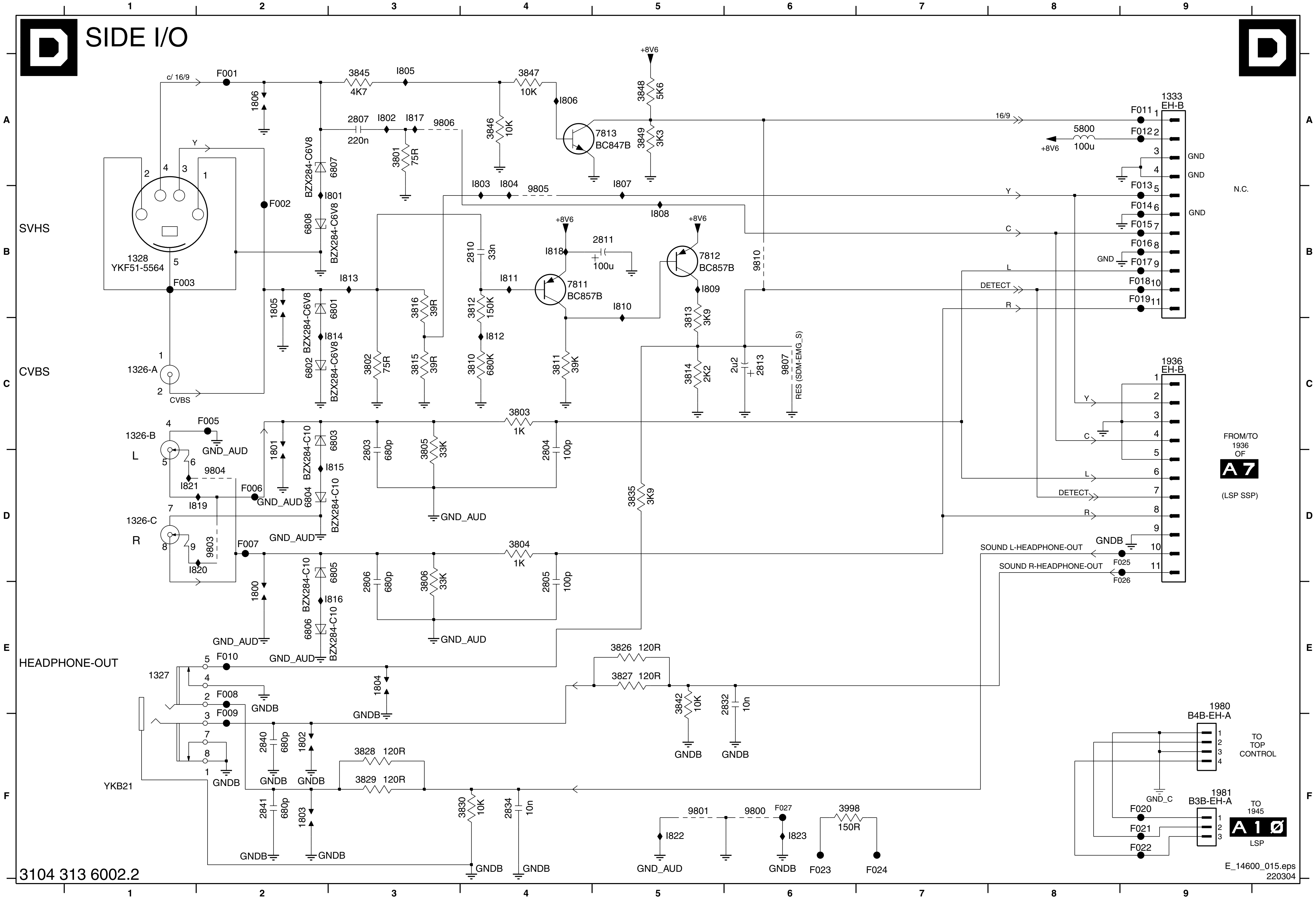
0240	C1
0241	A1
0242	A1
1254	D1
1255	C1
1256	A1
2286	B1
2288	A1
2292	B1
2294	C1
2296	D1
2297	D1
3285	B1
3286	B1
3287	A1
3288	A1
3289	A1
3291	C1
3293	C1
3295	B1
9231	C1
9232	D1

Layout Side I/O Panel (PV02 Styling) (Bottom Side)


1
A
B
C
D
4202
6295
4201
6296
6297
3292
4241
4243
3294
6291
6292
4242/2243
3297
3296
6293
6294
A
K
3139 123 5291.5
CL 36532023_032.eps
160503

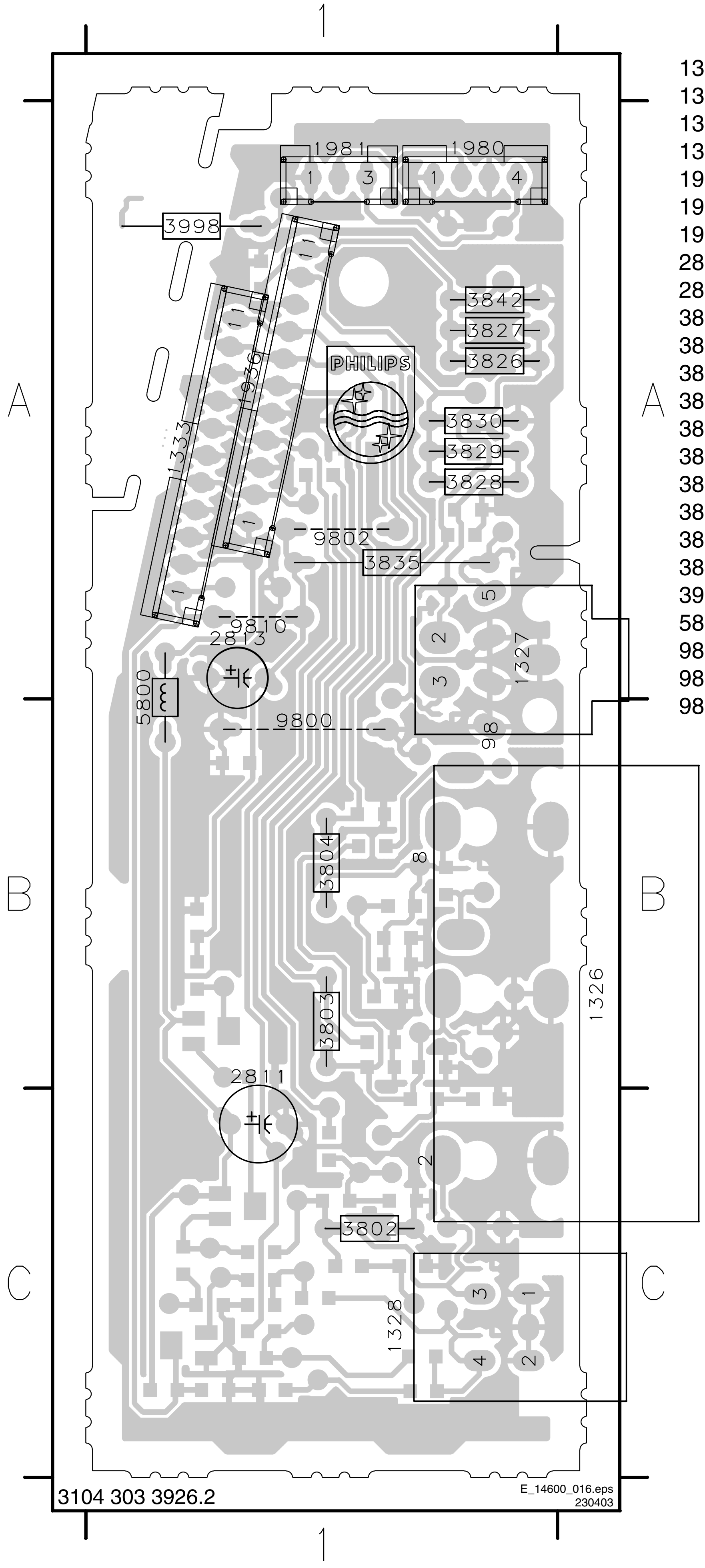
3292	B1
3294	C1
3296	D1
3297	D1
4201	B1
4202	A1
4241	B1
4242/2243	D1
4243	C1
6291	C1
6292	D1
6293	D1
6294	D1
6295	B1
6296	B1
6297	B1

Side IO Panel (FL13B Styling)


D
SIDE I/O
SVHS
CVBS
HEADPHONE-OUT
1328
YKF51-5564
1326-A
1326-B
1326-C
1327
YKB21
L
R
c/ 16/9
Y
CVBS
F001
F002
F003
F005
F006
F007
F008
F009
F010
3845 4K7
3847 10K
3846 10K
3848 5K6
3849 3K3
2807 220n
3801 75R
7813 BC847B
7811 BC857B
7812 BC857B
+8V6
2811 100u
2810 33n
3812 150K
3810 680K
3811 39K
3813 3K9
3814 2K2
2u2 2813
9807 RES (SDM-EMG_S)
3816 39R
3815 39R
3802 75R
6807 BZX284-C6V8
6808 BZX284-C6V8
6801 BZX284-C6V8
6802 BZX284-C6V8
6803 BZX284-C10
6804 BZX284-C10
6805 BZX284-C10
6806 BZX284-C10
2803 680p
3805 33K
3803 1K
2804 100p
2806 680p
3806 33K
3804 1K
2805 100p
3835 3K9
GND_AUD
GNDB
3826 120R
3827 120R
3842 10K
2832 10n
3828 120R
3829 120R
3830 10K
2834 10n
2840 680p
2841 680p
9801
9800
3998 150R
F023
F024
F027
1333 EH-B
16/9
5800 100u
GND
N.C.
DETECT
1936 EH-B
FROM/TO 1936 OF
A7
(LSP SSP)
SOUND L-HEADPHONE-OUT
SOUND R-HEADPHONE-OUT
F025
F026
1980 B4B-EH-A
TO TOP CONTROL
GND_C
1981 B3B-EH-A
TO 1945
A10
LSP
F020
F021
F022
3104 313 6002.2
E_14600_015.eps
220304

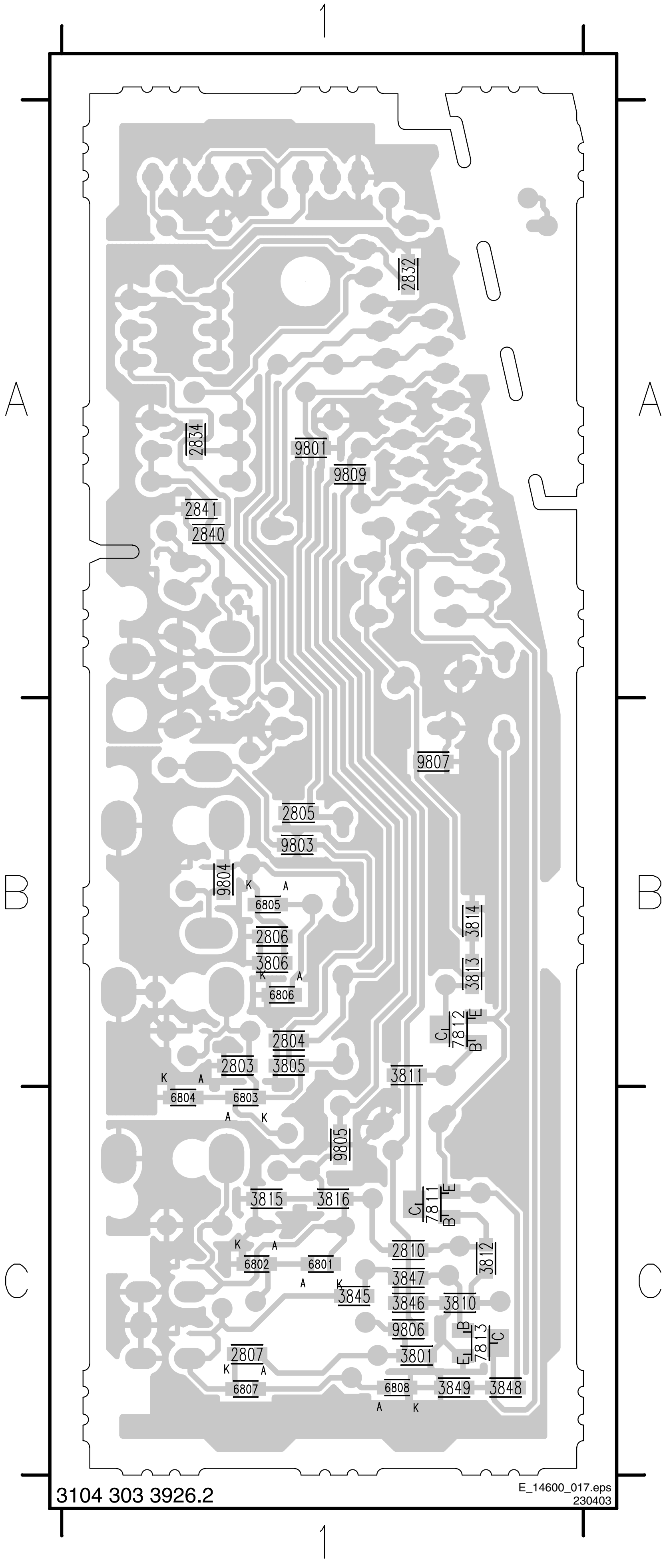
1326-A	C1
1326-B	C1
1326-C	D1
1327	E1
1328	B1
1333	A9
1800	E2
1801	D2
1802	F2
1803	F2
1804	E3
1805	B2
1806	A2
1936	C9
1980	E9
1981	F9
2803	D3
2804	D4
2805	E4
2806	E3
2807	A3
2810	B4
2811	B5
2813	C6
2832	E6
2834	F4
2840	F2
2841	F2
3801	A3
3802	C3
3803	C4
3804	D4
3805	C3
3806	D3
3810	C4
3811	C4
3812	B4
3813	B5
3814	C5
3815	C3
3816	B3
3826	E5
3827	E5
3828	F3
3829	F3
3830	F4
3835	D5
3842	E5
3845	A3
3846	A4
3847	A4
3848	A5
3849	A5
3998	F6
5800	A8
6801	B3
6802	C2
6803	C3
6804	D2
6805	D3
6806	E2
6807	A3
6808	B2
7811	B4
7812	B5
7813	A5
9800	F6
9801	F5
9803	D2
9804	D2
9805	B4
9806	A3
9807	C6
9810	B6
F001	A2
F002	B2
F003	B1
F005	C2
F006	D2
F007	D2
F008	E2
F009	F2
F010	E2
F011	A9
F012	A9
F013	B9
F014	B9
F015	B9
F016	B9
F017	B9
F018	B9
F019	B9
F020	F9
F021	F9
F022	F9
F023	F6
F024	F7
F025	D9
F026	E9
F027	F6
I801	B3
I802	A3
I803	A4
I804	A4
I805	A3
I806	A4
I807	A5
I808	B5
I809	B5
I810	B5
I811	B4
I812	C4
I813	B3
I814	C3
I815	D3
I816	E3
I817	A3
I818	B4
I819	D2
I820	D2
I821	D1
I822	F5
I823	F6

Layout Side IO Panel (FL13B Styling) (Top Side)


1
A
B
C
1981
1980
3998
1936
1333
3842
3827
3826
PHILIPS
3830
3829
3828
9802
3835
1327
9810
2813
5800
9800
98
3804
8
1326
3803
2811
2
3802
1328
3104 303 3926.2
E_14600_016.eps
230403

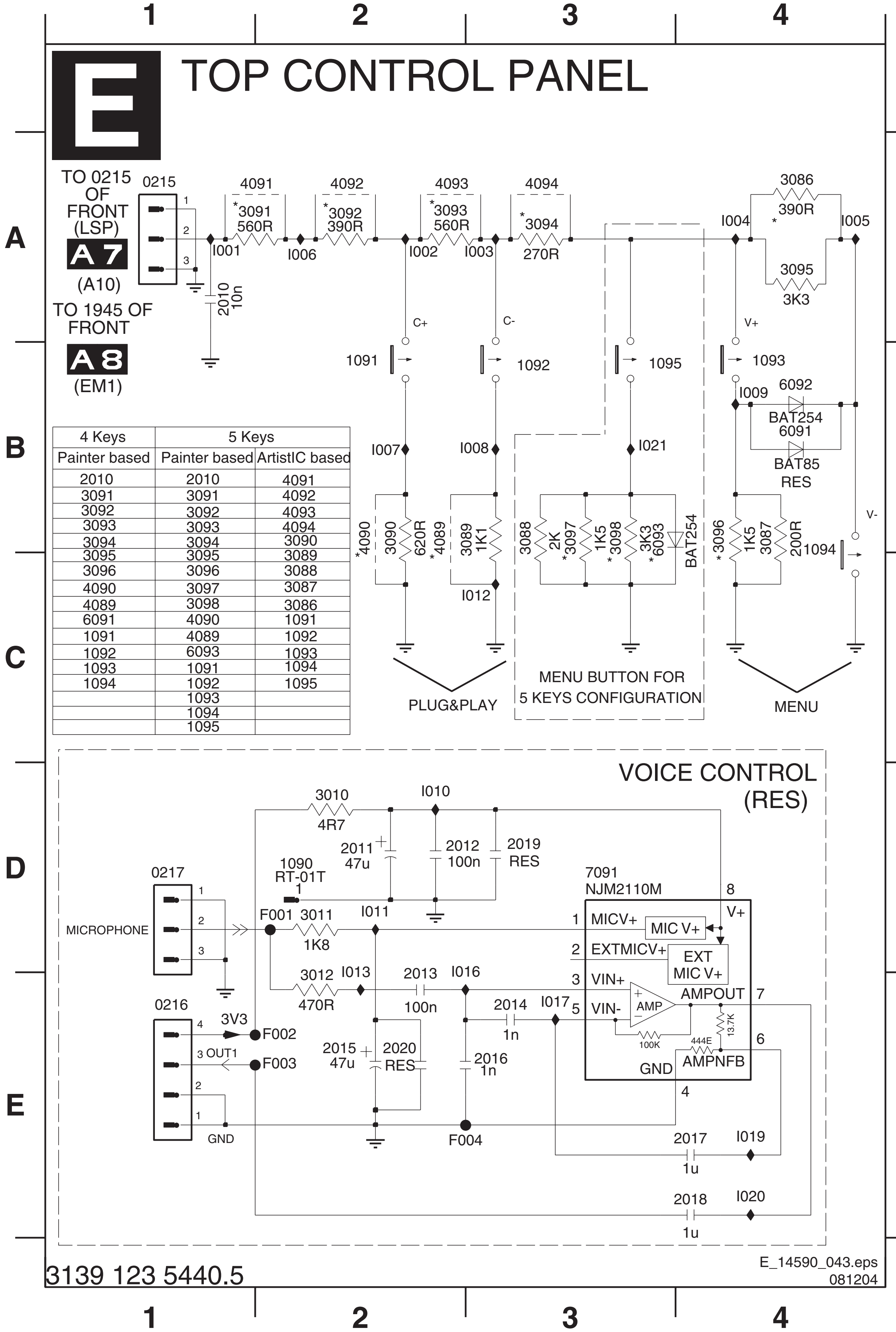
1326	B1
1327	A1
1328	C1
1333	A1
1936	A1
1980	A1
1981	A1
2811	B1
2813	A1
3802	C1
3803	B1
3804	B1
3826	A1
3827	A1
3828	A1
3829	A1
3830	A1
3835	A1
3842	A1
3998	A1
5800	A1
9800	B1
9802	A1
9810	A1

Layout Side IO Panel (FL13B Styling) (Bottom Side)


1
A
B
C
2832
2834
9801
9809
2841
2840
9807
2805
9803
9804
6805
2806
3806
6806
3814
3813
7812
2804
2803
3805
3811
6804
6803
9805
3815
3816
7811
6802
6801
2810
3847
3845
3846
3810
3812
9806
7813
3801
2807
6807
6808
3849
3848
3104 303 3926.2
E_14600_017.eps
230403

2803	B1
2804	B1
2805	B1
2806	B1
2807	C1
2810	C1
2832	A1
2834	A1
2840	A1
2841	A1
3801	C1
3805	B1
3806	B1
3810	C1
3811	B1
3812	C1
3813	B1
3814	B1
3815	C1
3816	C1
3845	C1
3846	C1
3847	C1
3848	C1
3849	C1
6801	C1
6802	C1
6803	B1
6804	C1
6805	B1
6806	B1
6807	C1
6808	C1
7811	C1
7812	B1
7813	C1
9801	A1
9803	B1
9804	B1
9805	C1
9806	C1
9807	B1
9809	A1

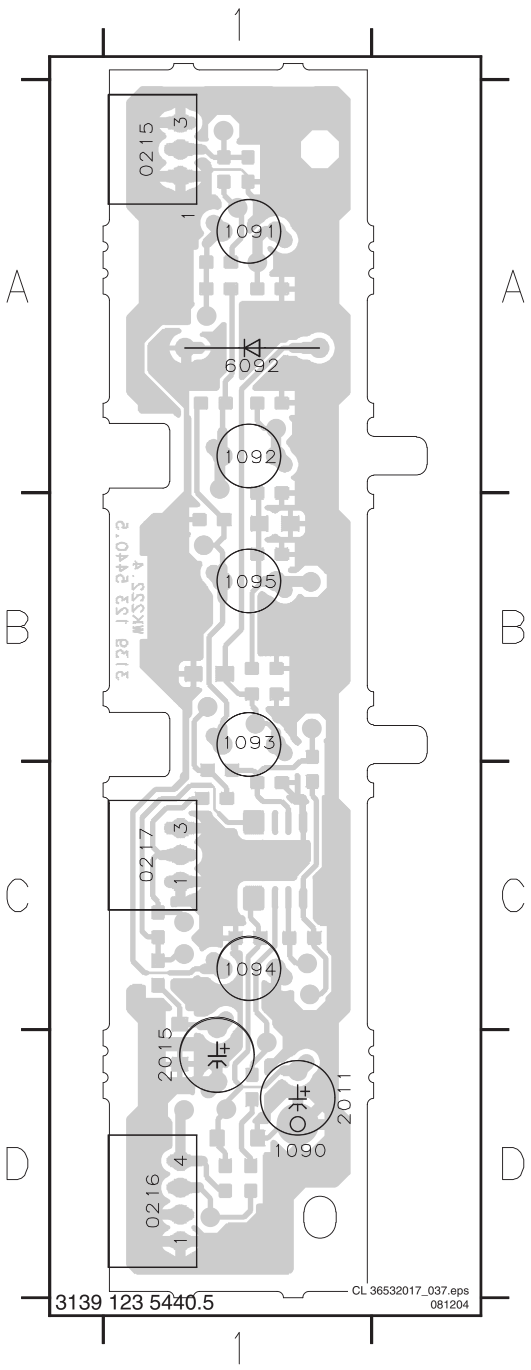
Top Control Panel (PV02 Styling)


1
2
3
4
A
B
C
D
E
E
TOP CONTROL PANEL
TO 0215 OF FRONT (LSP)
A7
(A10)
TO 1945 OF FRONT
A8
(EM1)
0215
4091
4092
4093
4094
3086
390R
*3091
560R
*3092
390R
*3093
560R
*3094
270R
I001
I006
I002
I003
I004
I005
3095
3K3
2010
10n
C+
C-
V+
1091
1092
1095
1093
I009
6092
BAT254
6091
BAT85
RES
I007
I008
I021
*4090
3090
620R
*4089
3089
1K1
I012
3088
2K
*3097
1K5
*3098
3K3
*6093
BAT254
*3096
1K5
3087
200R
1094
V-
PLUG&PLAY
MENU BUTTON FOR
5 KEYS CONFIGURATION
MENU
VOICE CONTROL
(RES)
3010
4R7
I010
2011
47u
2012
100n
2019
RES
1090
RT-01T
0217
MICROPHONE
F001
3011
1K8
I011
7091
NJM2110M
MICV+
MIC V+
EXTMICV+
EXT
MIC V+
VIN+
VIN-
AMP
AMPOUT
V+
GND
AMPNFB
100K
444E
13.7K
3012
470R
I013
2013
100n
I016
2014
1n
I017
0216
3V3
F002
OUT1
F003
2015
47u
2020
RES
2016
1n
GND
F004
2017
1u
I019
2018
1u
I020
3139 123 5440.5
E_14590_043.eps
081204

4 Keys	5 Keys	
Painter based	Painter based	ArtistIC based
2010	2010	4091
3091	3091	4092
3092	3092	4093
3093	3093	4094
3094	3094	3090
3095	3095	3089
3096	3096	3088
4090	3097	3087
4089	3098	3086
6091	4090	1091
1091	4089	1092
1092	6093	1093
1093	1091	1094
1094	1092	1095
	1093	
	1094	
	1095	

0215	A1
0216	E1
0217	D1
1090	D2
1091	B2
1092	B3
1093	B4
1094	B4
1095	B3
2010	A1
2011	D2
2012	D2
2013	E2
2014	E3
2015	E2
2016	E3
2017	E4
2018	E4
2019	D3
2020	E2
3010	D2
3011	D2
3012	E2
3086	A4
3087	B4
3088	B3
3089	B3
3090	B2
3091	A1
3092	A2
3093	A2
3094	A3
3095	A4
3096	B4
3097	B3
3098	B3
4089	B2
4090	B2
4091	A2
4092	A2
4093	A2
4094	A3
6091	B4
6092	B4
6093	B3
7091	D3
F001	D2
F002	E2
F003	E2
F004	E2
I001	A1
I002	A2
I003	A3
I004	A4
I005	A4
I006	A2
I007	B2
I008	B3
I009	B4
I010	D2
I011	D2
I012	C3
I013	D2
I016	D2
I017	E3
I019	E4
I020	E4
I021	B3

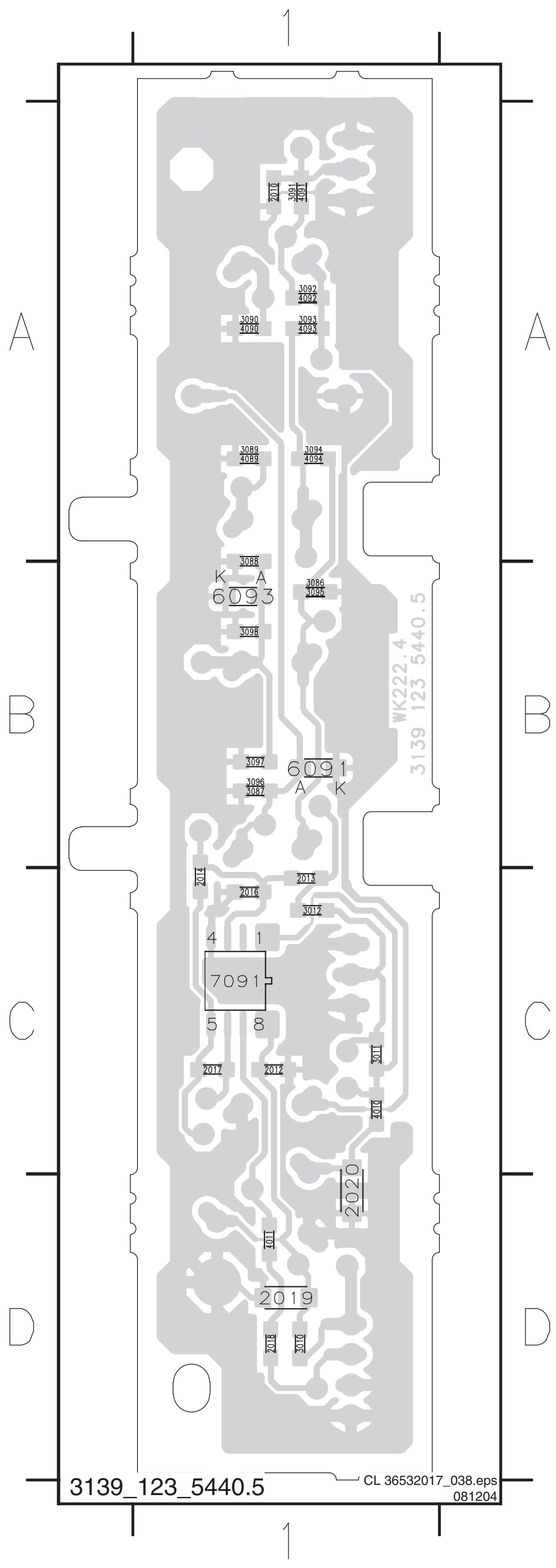
Layout Top Control Panel (PV02 Styling) (Top Side)


1
A
B
C
D
0215
1091
6092
1092
1095
1093
0217
1094
2015
2011
1090
0216
3139 123 5440.5
CL 36532017_037.eps
081204

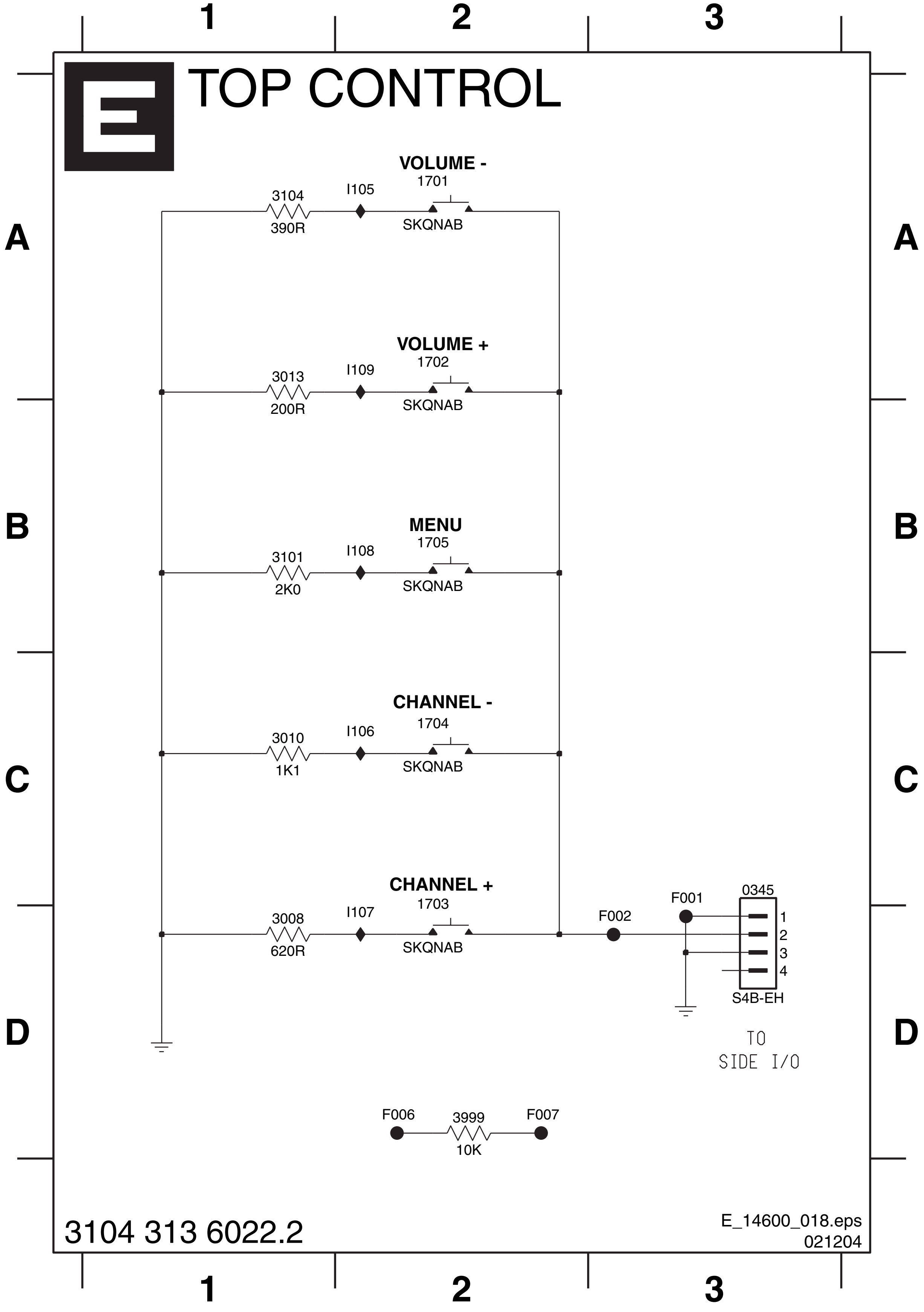
0215	A1
0216	D1
0217	C1
1090	D1
1091	A1
1092	A1
1093	B1
1094	C1
1095	B1
2011	D1
2015	D1
6092	A1

Layout Top Control Panel (PV02 Styling) (Bottom Side)

2010	A1	2018	D1	3086	B1	3092	A1	3098	B1	4092	A1
2012	C1	2019	D1	3087	B1	3093	A1	4010	C1	4093	A1
2013	C1	2020	D1	3088	A1	3094	A1	4011	D1	4094	A1
2014	C1	3010	D1	3089	A1	3095	B1	4089	A1	6091	B1
2016	C1	3011	C1	3090	A1	3096	B1	4090	A1	6093	B1
2017	C1	3012	C1	3091	A1	3097	B1	4091	A1	7091	C1


1
A
B
C
D
6093
K
A
6091
A
K
7091
4
1
5
8
2020
2019
WK222.4
3139 123 5440.5
3139_123_5440.5
CL 36532017_038.eps
081204

Top Control Panel (FL13B Styling)

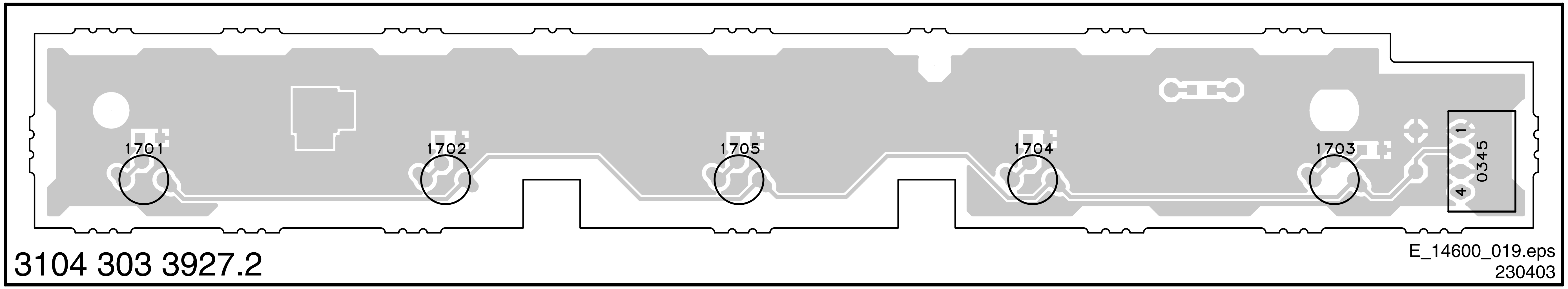

1
2
3
A
B
C
D
E
TOP CONTROL
VOLUME -
1701
3104
390R
I105
SKQNAB
VOLUME +
1702
3013
200R
I109
SKQNAB
MENU
1705
3101
2K0
I108
SKQNAB
CHANNEL -
1704
3010
1K1
I106
SKQNAB
CHANNEL +
1703
3008
620R
I107
SKQNAB
F002
F001
0345
1
2
3
4
S4B-EH
TO
SIDE I/O
F006
3999
10K
F007
3104 313 6022.2
E_14600_018.eps
021204

0345	**C3**
1701	**A2**
1702	**A2**
1703	**C2**
1704	**B2**
1705	**B2**
3008	**C1**
3010	**B1**
3013	**A1**
3101	**B1**
3104	**A1**
3999	**D2**
F001	**C3**
F002	**C3**
F006	**D2**
F007	**D2**
I105	**A2**
I106	**B2**
I107	**C2**
I108	**B2**
I109	**A2**

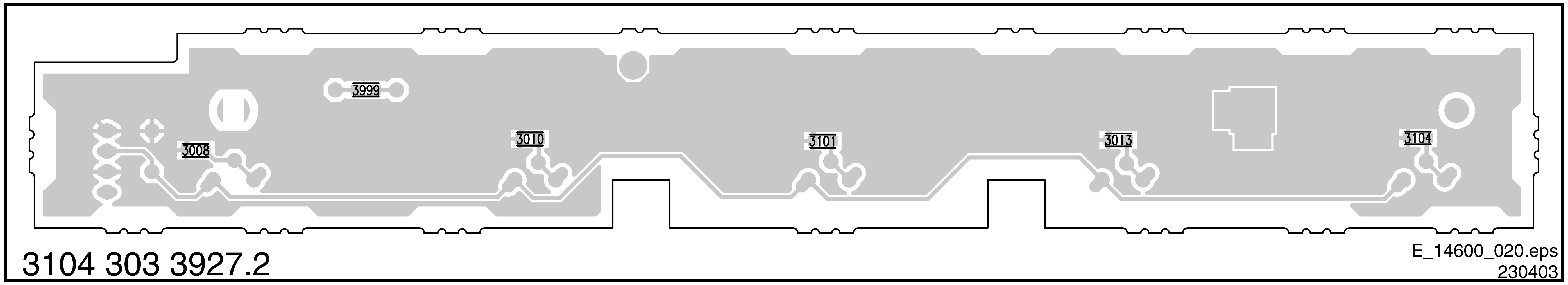
Personal Notes:

E_06532_012.eps
131004

Layout Top Control Panel (FL13B Styling) (Top Side)

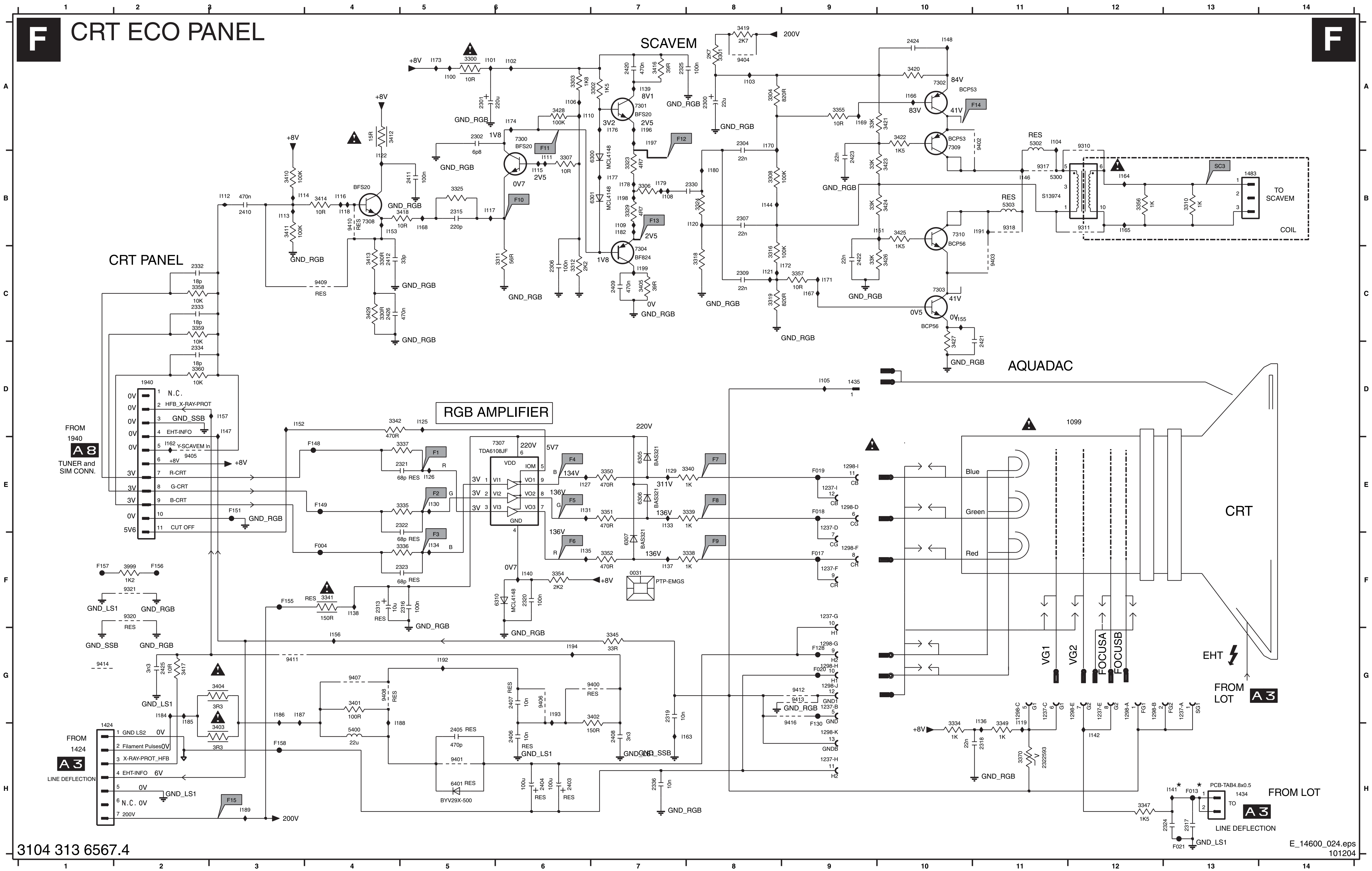

1701
1702
1705
1704
1703
1
0345
4
3104 303 3927.2
E_14600_019.eps
230403

Layout Top Control Panel (FL13B Styling) (Bottom Side)


3999
3008
3010
3101
3013
3104
3104 303 3927.2
E_14600_020.eps
230403

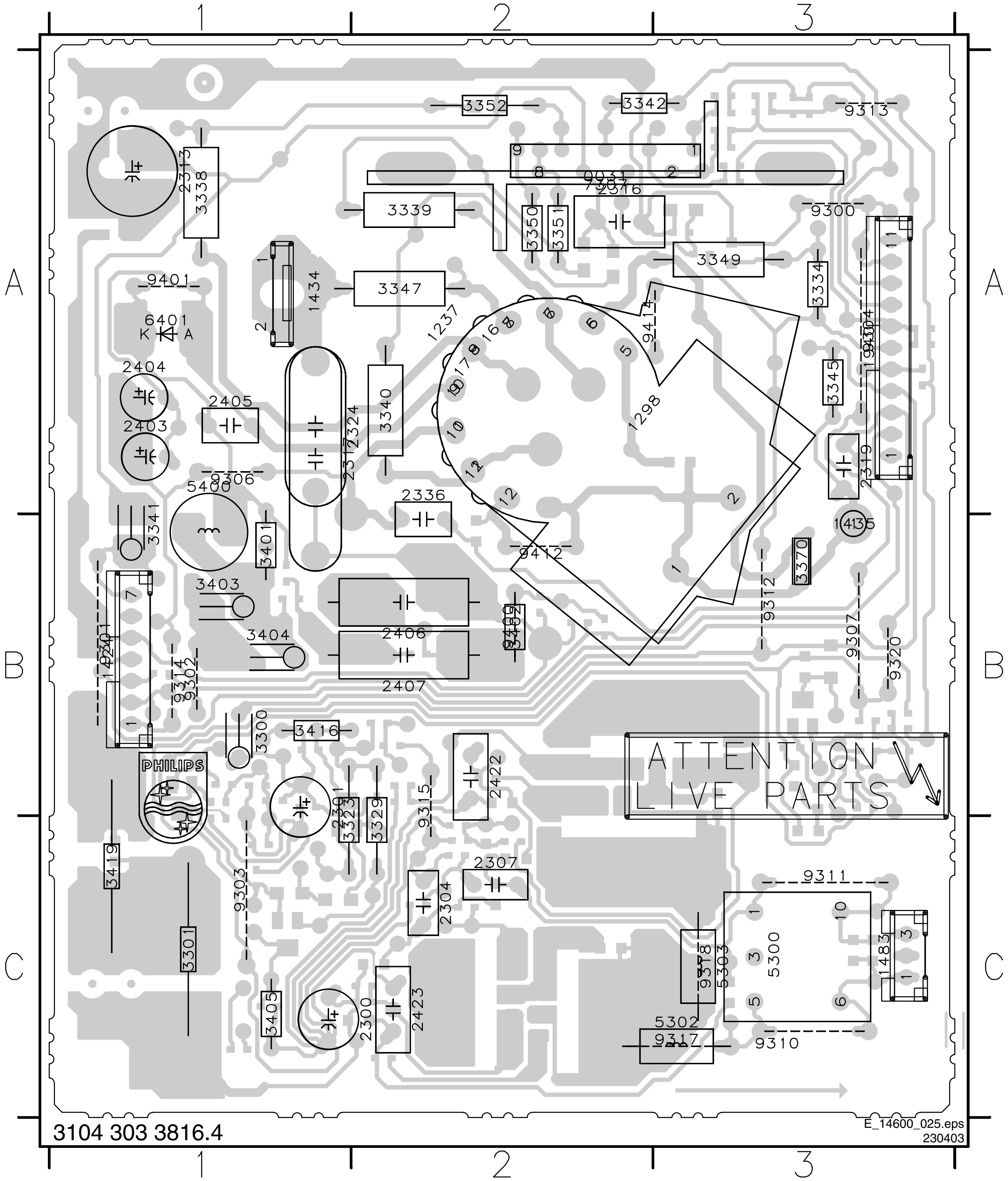
CRT Panel

0031 F7
1237-A G13
1237-B G9
1237-C G11
1237-D E9
1237-E G12
1237-F F9
1237-G F9
1237-H H9
1237-I E9
1298-A G12
1298-B G12
1298-C G11
1298-D E9
1298-E G12
1298-F F9
1298-G G9
1298-H G9
1298-I E9
1298-J G9
1298-K H9
1424 H1
1434 H13
1435 D9
1483 B13
1940 D2
2300 A8
2301 A5
2302 A5
2304 A8
2306 C6
2307 B8
2309 C8
2313 F4
2315 B5
2316 F5
2317 H13
2318 H11
2319 G7
2320 F6
2321 E5
2322 E5
2323 F5
2324 H13
2325 A7
2330 B8
2332 C2
2333 C2
2334 D2
2336 H7
2403 H6
2404 H6
2405 H5
2406 H6
2407 G6
2408 H7
2409 C7
2410 B3
2411 B5
2412 C4
2420 A7
2421 C11
2422 C9
2423 B9
2424 A10
2425 G2
2426 C4
3300 A5
3301 A8
3302 A7
3303 A6
3304 A8
3306 B7
3307 B6
3308 B8
3310 B13
3311 C6
3312 C6
3316 C8
3318 C8
3319 C8
3323 B7
3324 B8
3325 B5
3329 B7
3334 H10
3335 E5
3336 F5
3337 E5
3338 F8
3339 E8
3340 E8
3341 F4
3342 D4
3345 G7
3347 H12
3349 H11
3350 E7
3351 E7
3352 F7
3354 F6
3355 A9
3356 B12
3357 C9
3358 C2
3359 C2
3360 D2
3370 H11
3401 G4
3402 G7
3403 H3
3404 G3
3405 C7
3410 B3
3411 B3
3412 A4
3413 C4
3414 B4
3416 A7
3417 G2
3418 B5
3419 A8
3420 A10
3421 A10
3422 A10
3423 B10
3424 B10
3425 B10
3426 C10
3427 D10
3428 A6
3429 C4
3999 F2
5300 B11
5302 A11
5303 B11
5400 H4
6300 B7
6301 B7
6305 E7
6306 E7
6307 F7
6310 F6
6401 H5
7300 A6
7301 A7
7302 A10
7303 C10
7304 C7
7307 E5
7308 B4
7309 A10
7310 B10
9310 A12
9311 B12
9317 B11
9318 B11
9320 F2
9321 F2
9400 G7
9401 H5
9402 A11
9403 C11
9404 A8
9405 E2
9406 G6
9407 G4
9408 G4
9409 C4
9410 B4
9411 G3
9412 G9
9413 G9
9414 G1
9416 H9
F004 F4
F013 H13
F017 F9
F018 E9
F019 E9
F020 G9
F021 H13
F128 G9
F130 H9
F148 E4
F149 E4
F151 E3
F155 F3
F156 F2
F157 F1
F158 H3
I100 A5
I101 A5
I102 A6
I103 A8
I104 A11
I105 D9
I106 A6
I108 B7
I109 B7
I110 A6
I111 B6
I112 B3
I113 B3
I114 B3
I115 B6
I116 B4
I117 B5
I118 B4
I119 G11
I120 B8
I121 C8
I122 B4
I125 D5
I126 E5
I127 E6
I129 E7
I130 E5
I131 E6
I133 E7
I134 F5
I135 F6
I136 G11
I137 F7
I138 F4
I139 A7
I140 F6
I141 H13
I142 H12
I144 B8
I146 B11
I147 D3
I148 A10
I151 B10
I152 D3
I153 B4
I155 C10
I156 G4
I157 D3
I162 E2
I163 H8
I164 B12
I165 B12
I166 A10
I167 C9
I168 B5
I169 A9
I170 A8
I171 C9
I172 C9
I173 A5
I174 A6
I176 A7
I177 B7
I178 B7
I179 B7
I180 B8
I182 B7
I184 G2
I185 G2
I186 G3
I187 G3
I188 G4
I189 H3
I191 B11
I192 G5
I193 G6
I194 G6
I196 A7
I197 A7
I198 B7
I199 C7


F
CRT ECO PANEL
F
SCAVEM
CRT PANEL
RGB AMPLIFIER
AQUADAC
CRT
TDA6108JF
7307
FROM 1940
A8
TUNER and SIM CONN.
FROM 1424
A3
LINE DEFLECTION
FROM LOT
A3
FROM LOT
A3
LINE DEFLECTION
TO SCAVEM
COIL
EHT
VG1
VG2
FOCUSA
FOCUSB
Blue
Green
Red
N.C.
HFB_X-RAY-PROT
GND_SSB
EHT-INFO
Y-SCAVEM In
+8V
R-CRT
G-CRT
B-CRT
CUT OFF
GND LS2
Filament Pulses
X-RAY-PROT_HFB
EHT-INFO
N.C.
200V
+8V
200V
220V
GND_RGB
GND_LS1
GND_SSB
BFS20
BF824
BCP53
BCP56
MCL4148
BAS321
BYV29X-500
PTP-EMGS
PCB-TAB4.8x0.5
3104 313 6567.4
E_14600_024.eps
101204

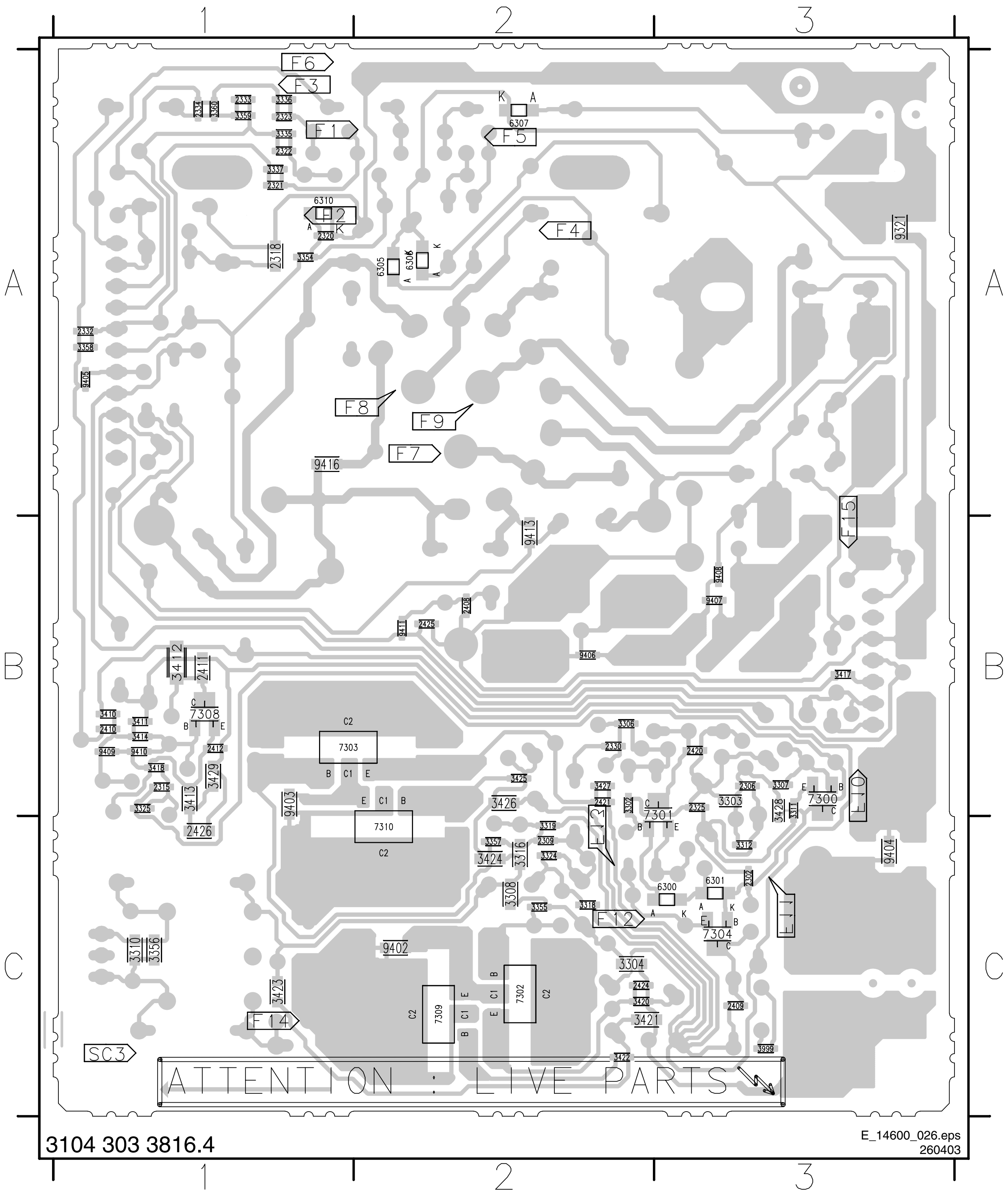
Layout CRT Panel (Top Side)

0031	A2	2300	C1	2324	A2	2423	C2	3340	A2	3352	A2	3419	C1	9301	B1	9312	B3	9401	A1
1237	A2	2301	B1	2336	A2	3300	B1	3341	A1	3370	B3	5300	C3	9302	B1	9313	A3	9412	B2
1298	A2	2304	C2	2403	A1	3301	C1	3342	A2	3401	B1	5302	C3	9303	C1	9314	B1	9414	A2
1424	B1	2307	C2	2404	A1	3323	C1	3345	A3	3402	B2	5303	C3	9304	A3	9315	B2		
1434	A1	2313	A1	2405	A1	3329	C2	3347	A2	3403	B1	5400	A1	9306	A1	9317	C3		
1435	A3	2316	A2	2406	B2	3334	A3	3349	A3	3404	B1	6401	A1	9307	B3	9318	C3		
1483	C3	2317	B2	2407	B2	3338	A1	3350	A2	3405	C1	7307	A2	9310	C3	9320	B3		
1940	A3	2319	A3	2422	B2	3339	A2	3351	A2	3416	B1	9300	A3	9311	C3	9400	B2		

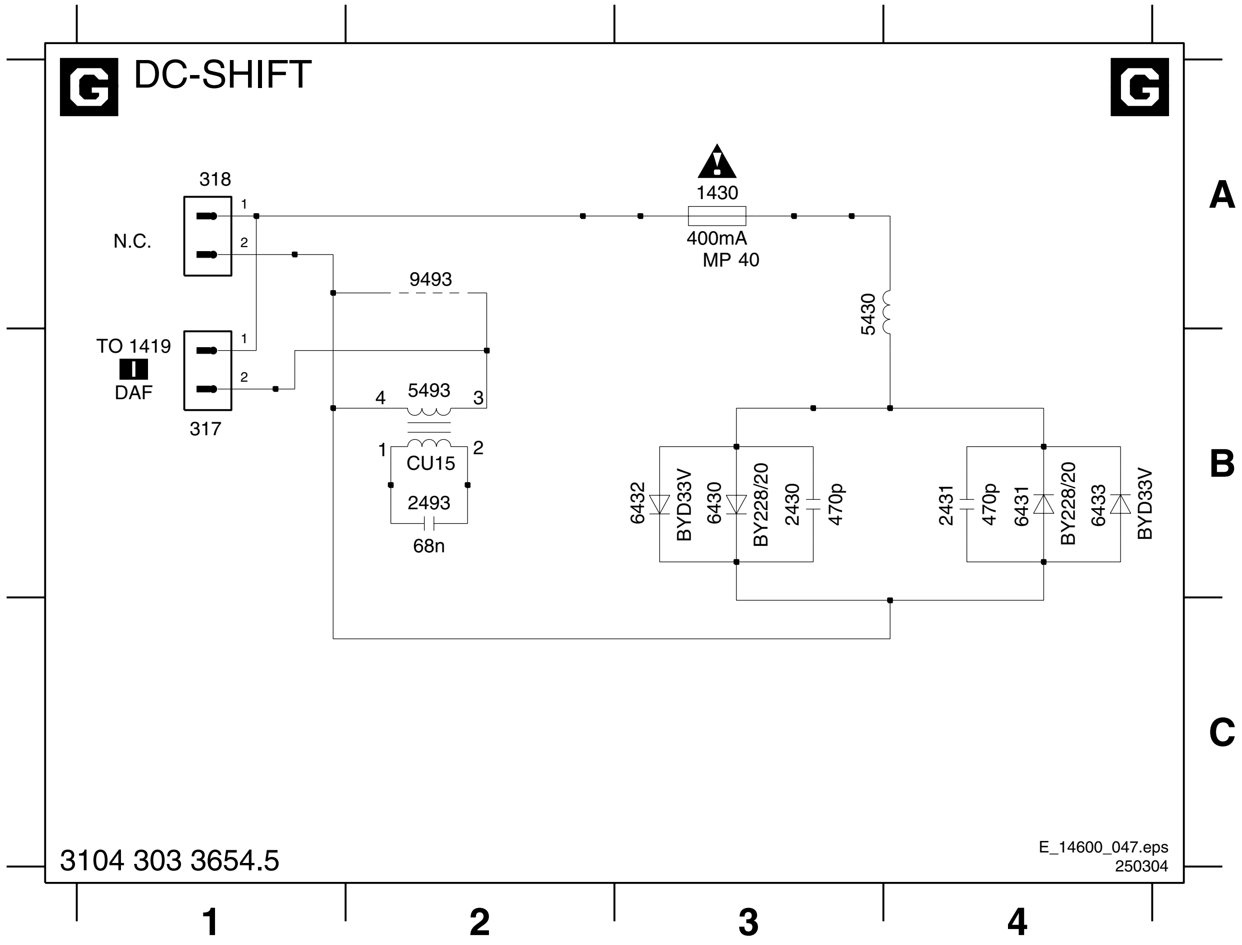

1
2
3
A
B
C
3352
3342
9313
9
8
0031
7307
2
2376
3339
3350
3351
9300
3349
2313
3338
9401
6401
K
A
1434
3347
1237
1298
9414
3334
9304
2404
2405
2403
2324
2317
3340
3345
2319
5400
9306
2336
1435
3341
3401
9412
3370
3403
3404
2406
2407
1940
9314
9302
3300
3416
PHILIPS
2301
3323
3329
9315
2422
ATTENTION
LIVE PARTS
9312
9307
9320
3419
9303
2307
2304
9311
3301
3405
2300
2423
9318
5303
5300
1483
5302
9317
9310
3104 303 3816.4
E_14600_025.eps
230403

Layout CRT Panel (Bottom Side)

2302	C3	2330	B2	2421	B2	3310	C1	3337	A1	3412	B1	3425	B2	6307	A2	9321	A3	9411	B2
2306	B3	2332	A1	2424	C2	3311	B3	3354	A1	3413	B1	3426	B2	6310	A1	9402	C2	9413	B2
2309	C2	2333	A1	2425	B2	3312	C3	3355	C2	3414	B1	3427	B2	7300	C3	9403	B1	9416	A1
2315	B1	2334	A1	2426	C1	3316	C2	3356	C1	3417	B3	3428	B3	7301	B3	9404	C3		
2318	A1	2408	B2	3302	B2	3318	C2	3357	C2	3418	B1	3429	B1	7302	C2	9405	A1		
2320	A1	2409	C3	3303	B3	3319	C2	3358	A1	3420	C2	3999	C3	7303	B1	9406	B2		
2321	A1	2410	B1	3304	C2	3324	C2	3359	A1	3421	C2	6300	C3	7304	C3	9407	B3		
2322	A1	2411	B1	3306	B2	3325	B1	3360	A1	3422	C2	6301	C3	7308	B1	9408	B3		
2323	A1	2412	B1	3307	B3	3335	A1	3410	B1	3423	C1	6305	A2	7309	C2	9409	B1		
2325	B3	2420	B3	3308	C2	3336	A1	3411	B1	3424	C2	6306	A2	7310	C1	9410	B1		


1
2
3
A
B
C
F6
F3
F1
F5
6307
K
A
6310
F2
F4
2318
9321
F8
F9
F7
9416
9413
F15
3412
2411
7308
7303
C2
B
C1
E
9403
7310
3426
3424
3316
3308
F13
7301
3303
3428
7300
F10
9404
6300
6301
7304
F12
F11
3310
3356
9402
3304
3421
7309
7302
3423
F14
SC3
ATTENTION : LIVE PARTS
3104 303 3816.4
E_14600_026.eps
260403

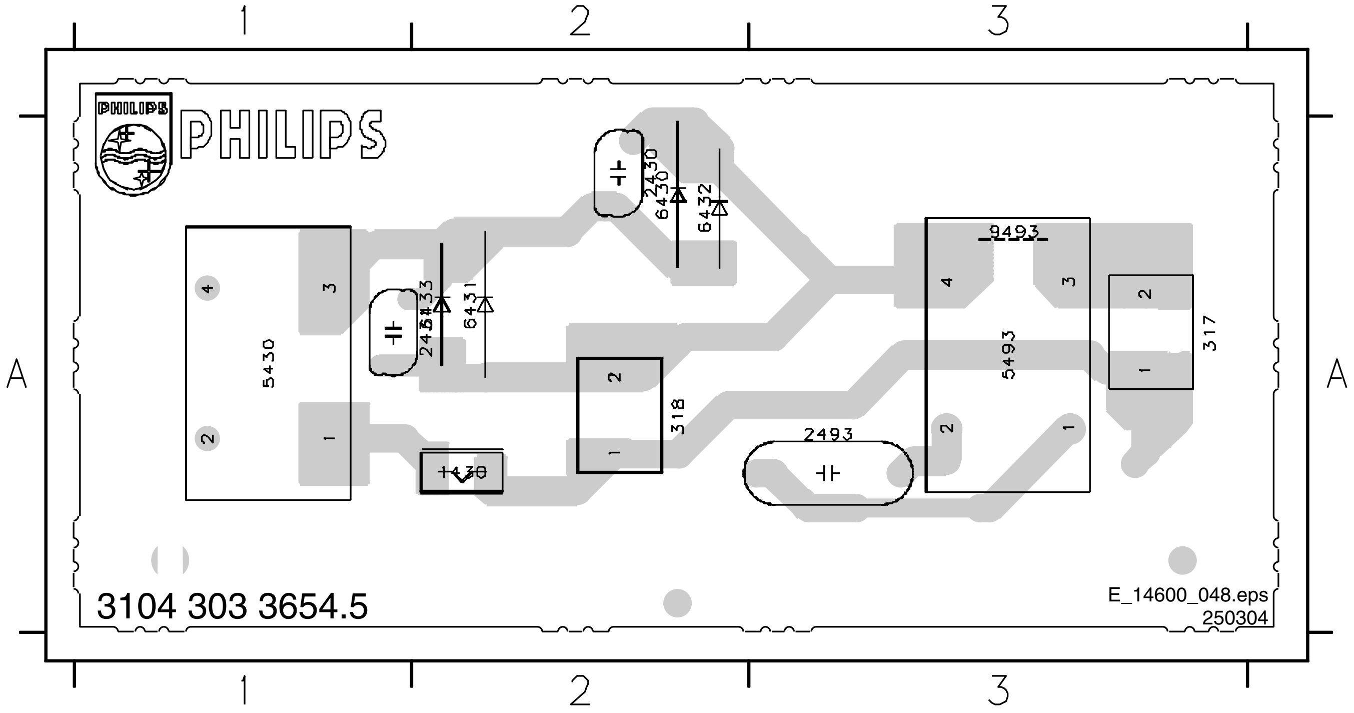
DC Shift Panel


G
DC-SHIFT
G
318
N.C.
1
2
TO 1419
DAF
1
2
317
1430
400mA
MP 40
9493
4
5493
3
1
CU15
2
2493
68n
5430
6432
BYD33V
6430
BY228/20
2430
470p
2431
470p
6431
BY228/20
6433
BYD33V
A
B
C
1
2
3
4
3104 303 3654.5
E_14600_047.eps
250304

317	B1
318	A1
1430	A3
2430	B3
2431	B4
2493	B2
5430	A3
5493	B2
6430	B3
6431	B4
6432	B3
6433	B4

Layout DC Shift Panel

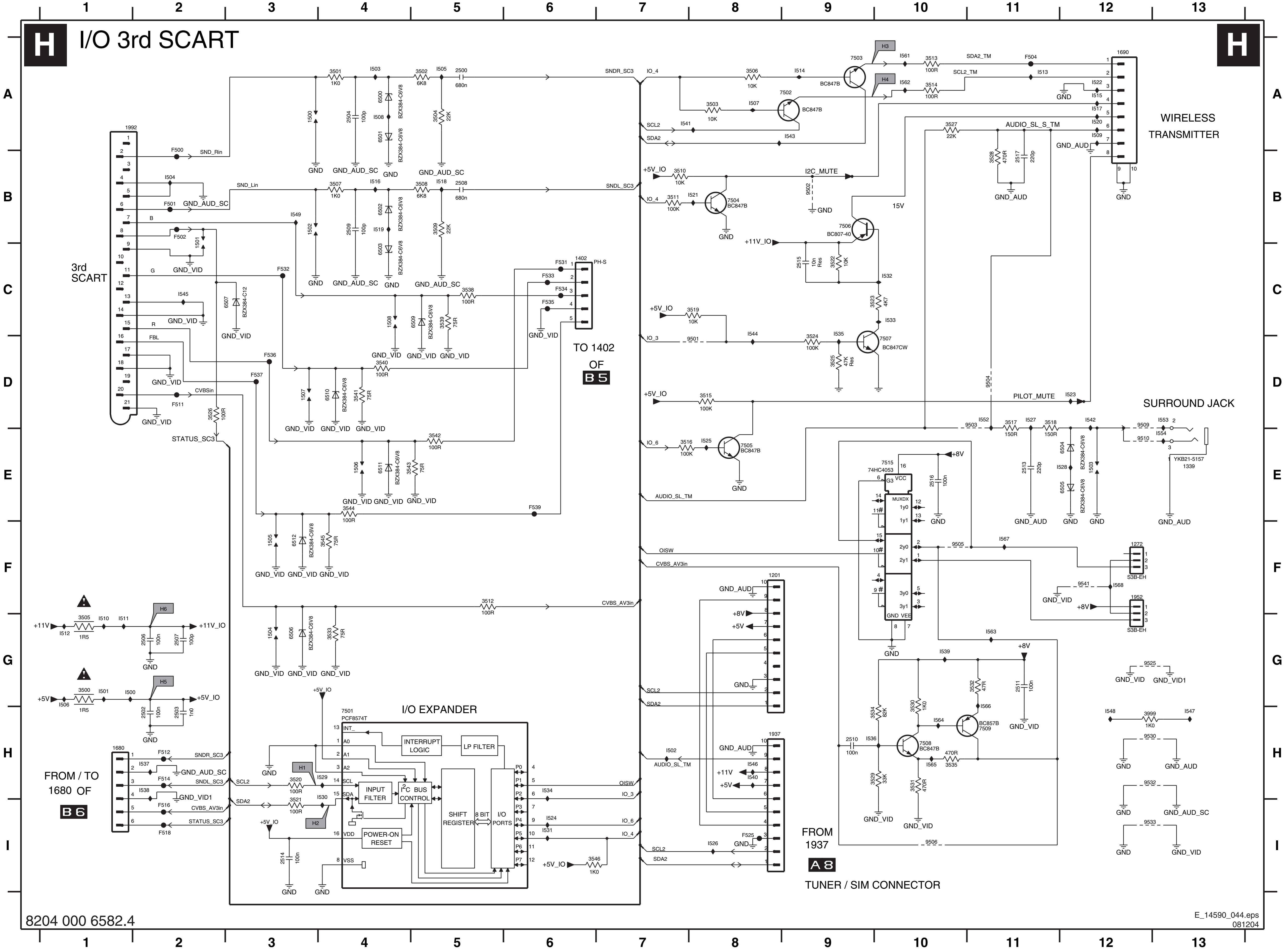
317	A3
318	A2
1430	A2
2430	A2
2431	A1
2493	A3
5430	A1
5493	A3
6430	A2
6431	A2
6432	A2
6433	A2
9493	A3


1
2
3
PHILIPS
5430
4
3
2
1
2430
6430
6432
2431
6433
6431
1430
318
2
1
2493
9493
5493
317
A
A
3104 303 3654.5
E_14600_048.eps
250304

Personal Notes:

E_06532_012.eps
131004

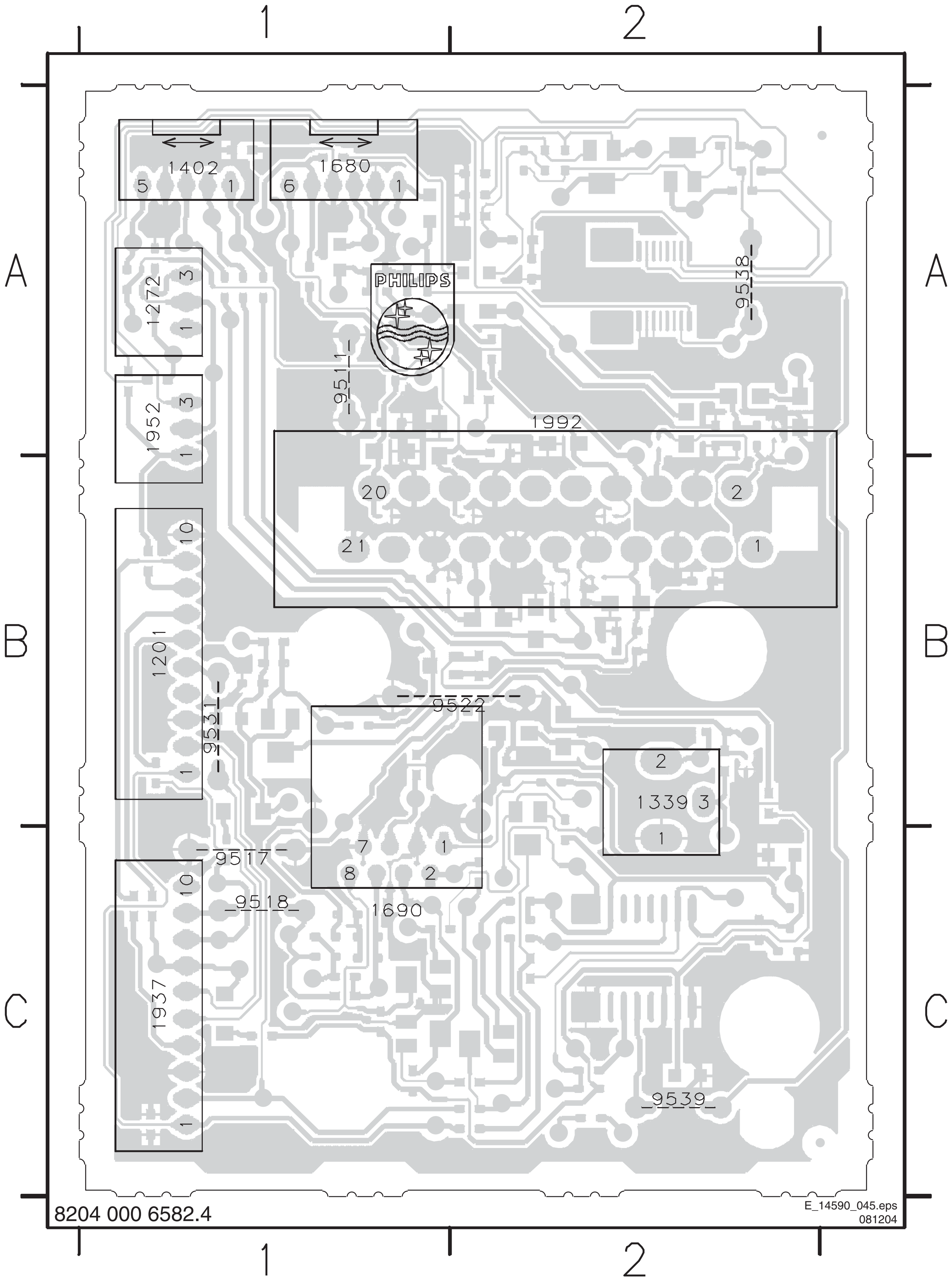
I/O 3rd Scart (PV02 Styling)


H
I/O 3rd SCART
3rd SCART
1992
WIRELESS TRANSMITTER
1690
SURROUND JACK
YKB21-5157
1339
TO 1402 OF B5
1402
PH-S
FROM / TO 1680 OF B6
1680
FROM 1937
A8
TUNER / SIM CONNECTOR
1937
1201
I/O EXPANDER
7501
PCF8574T
INTERRUPT LOGIC
LP FILTER
INPUT FILTER
I²C BUS CONTROL
SHIFT REGISTER
8 BIT
I/O PORTS
POWER-ON RESET
74HC4053
MUXDX
1272
1952
S3B-EH
SNDR_SC3
SNDL_SC3
SND_Rin
SND_Lin
CVBSin
STATUS_SC3
CVBS_AV3in
AUDIO_SL_TM
AUDIO_SL_S_TM
I2C_MUTE
PILOT_MUTE
OISW
SCL2
SDA2
SDA2_TM
SCL2_TM
IO_3
IO_4
IO_6
+5V_IO
+11V_IO
+11V
+5V
+8V
15V
GND
GND_AUD
GND_AUD_SC
GND_VID
GND_VID1
BC847B
BC807-40
BC847CW
BC857B
BZX384-C6V8
BZX384-C12
8204 000 6582.4
E_14590_044.eps
081204

1201	F8
1272	F12
1339	E13
1402	C6
1500	A3
1501	B2
1502	B3
1503	E12
1504	G3
1505	F3
1506	E4
1507	D3
1508	C4
1680	H1
1690	A12
1937	H8
1952	F12
1992	A2
2500	A5
2502	H2
2503	H2
2504	A4
2506	G2
2507	G2
2508	B5
2509	B4
2510	H9
2511	G11
2513	E11
2514	I3
2515	C9
2516	E10
2517	B11
3500	G1
3501	A4
3502	A5
3503	A8
3504	A5
3505	G1
3506	A8
3507	B4
3508	B5
3509	B5
3510	B7
3511	B7
3512	F5
3513	A10
3514	A10
3515	D8
3516	E7
3517	D11
3518	D11
3519	C8
3520	H3
3521	I3
3522	C9
3523	C9
3524	D9
3525	D9
3526	D2
3527	A10
3528	B11
3529	H10
3530	G10
3531	H10
3532	G11
3533	G4
3534	H10
3535	H10
3538	C5
3539	C5
3540	D4
3541	D4
3542	E5
3543	E4
3544	E4
3545	F4
3546	I6
3999	H12
6500	A4
6501	A4
6502	B4
6503	C4
6504	E12
6505	E12
6506	G3
6507	C2
6509	C5
6510	D4
6511	E4
6512	F3
7501	H4
7502	A8
7503	A9
7504	B8
7505	E8
7506	B9
7507	D10
7508	H10
7509	H11
7515	E10
9501	D8
9502	B9
9503	D11
9504	D11
9505	F10
9506	I10
9509	D12
9510	E12
9525	G12
9530	H12
9532	H12
9533	I12
9541	F12
F500	B2
F501	B2
F502	B2
F504	A11
F511	D2
F512	H2
F514	H2
F516	I2
F518	I2
F525	I8
F531	C6
F532	C3
F533	C6
F534	C6
F535	C6
F536	D3
F537	D3
F539	E6
I500	G1
I501	G1
I502	H7
I503	A4
I504	B2
I505	A5
I506	G1
I507	A8
I508	A4
I509	A12
I510	G1
I511	G1
I512	G1
I513	A11
I514	A9
I515	A12
I516	B4
I517	A12
I518	B5
I519	B4
I520	A12
I521	B8
I522	A12
I523	D12
I524	I6
I525	E8
I526	I8
I527	D11
I528	E12
I529	H4
I530	H4
I531	I6
I532	C10
I533	C10
I534	H6
I535	C9
I536	H9
I537	H2
I538	H2
I539	G10
I540	H8
I541	A7
I542	D12
I543	A9
I544	C8
I545	C2
I546	H8
I547	H13
I548	H12
I549	B3
I552	D11
I553	D13
I554	E13
I561	A10
I562	A10
I563	G11
I564	H10
I565	H10
I566	G11
I567	F11
I568	F12

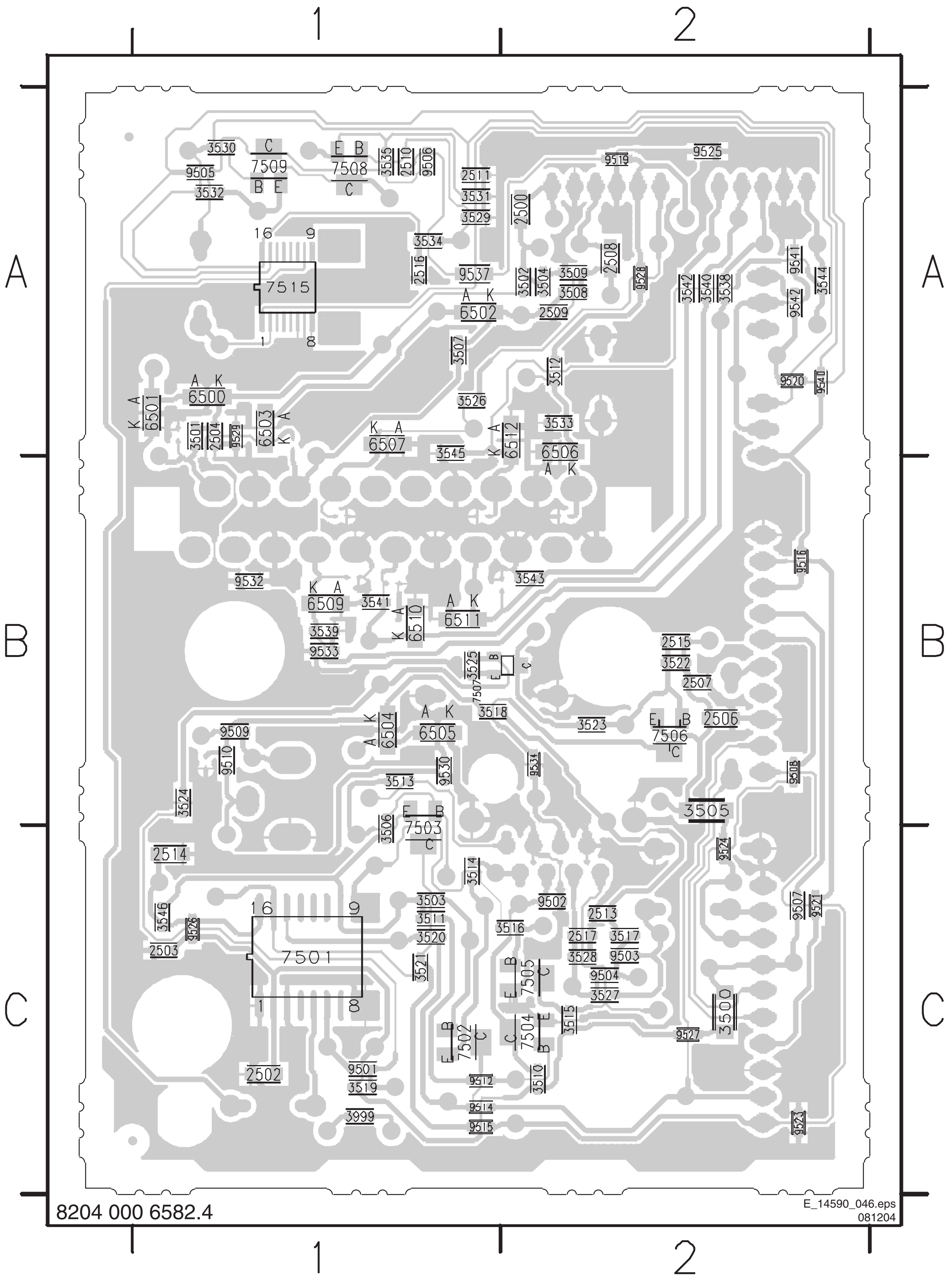
Layout I/O 3rd Scart (PV02 Styling) (Top Side)

1201	B1	1339	B2	1680	A1	1937	C1	1992	A2	9517	C1	9522	B2	9538	A2
1272	A1	1402	A1	1690	B1	1952	A1	9511	A1	9518	C1	9531	B1	9539	C2

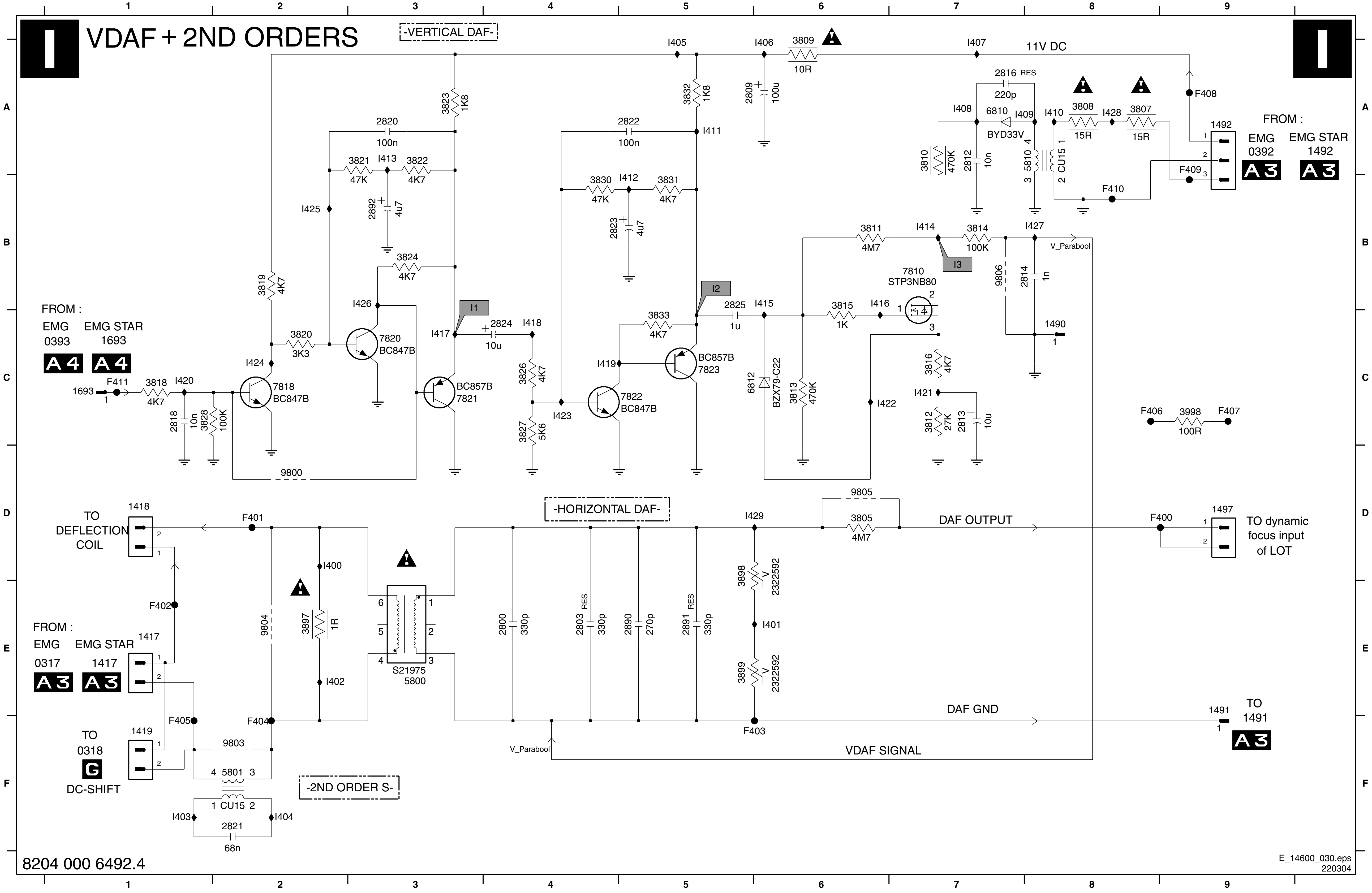

1
2
A
B
C
1402
5
1
1680
6
1
1272
3
1
1952
3
1
PHILIPS
9511
9538
1992
20
2
21
1
10
1201
9531
1
9522
1339
2
3
1
7
1
8
2
1690
9517
9518
10
1937
1
9539
8204 000 6582.4
E_14590_045.eps
081204

Layout I/O 3rd Scart (PV02 Styling) (Bottom Side)

2500	A2	2515	B2	3509	A2	3521	C1	3533	A2	3999	C1	6512	A2	9502	C2	9516	B2	9532	B1
2502	C1	2516	A1	3510	C2	3522	B2	3534	A1	6500	A1	7501	C1	9503	C2	9519	A2	9533	B1
2503	C1	2517	C2	3511	C1	3523	B2	3535	A1	6501	A1	7502	C1	9504	C2	9520	A2	9534	B2
2504	A1	3500	C2	3512	A2	3524	B1	3538	A2	6502	A1	7503	C1	9505	A1	9521	C2	9537	A1
2506	B2	3501	A1	3513	B1	3525	B1	3539	B1	6503	A1	7504	C2	9506	A1	9523	C2	9540	A2
2507	B2	3502	A2	3514	C1	3526	A1	3540	A2	6504	B1	7505	C2	9507	C2	9524	C2	9541	A2
2508	A2	3503	C1	3515	C2	3527	C2	3541	B1	6505	B1	7506	B2	9508	B2	9525	A2	9542	A2
2509	A2	3504	A2	3516	C2	3528	C2	3542	A2	6506	A2	7507	B2	9509	B1	9526	C1		
2510	A1	3505	B2	3517	C2	3529	A1	3543	B2	6507	B1	7508	A1	9510	B1	9527	C2		
2511	A1	3506	C1	3518	B1	3530	A1	3544	A2	6509	B1	7509	A1	9512	C1	9528	A2		
2513	C2	3507	A1	3519	C1	3531	A1	3545	A1	6510	B1	7515	A1	9514	C1	9529	A1		
2514	C1	3508	A2	3520	C1	3532	A1	3546	C1	6511	B2	9501	C1	9515	C1	9530	B1		

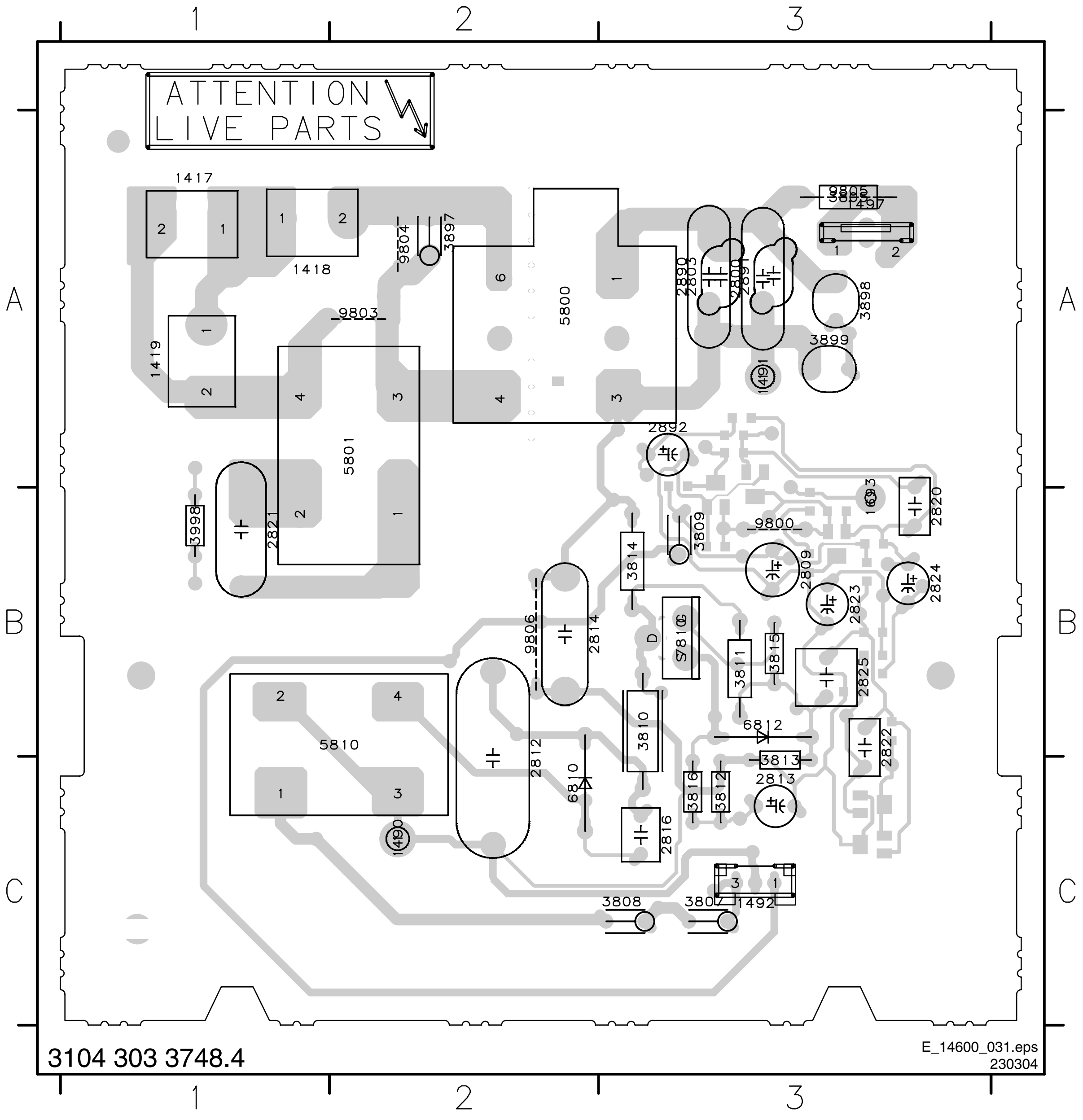

1
2
A
B
C
3530
7509
9505
3532
7508
3535
2510
9506
2511
3531
3529
2500
9519
9525
7515
16
9
1
8
3534
2516
9537
6502
3502
3504
3509
3508
2509
2508
9528
3542
3540
3538
9541
9542
3544
3507
3526
3512
9520
9540
6500
6501
3501
2504
3528
6503
6507
3545
6512
3533
6506
9532
6509
3541
6510
6511
3543
9516
3539
9533
3525
7507
2515
3522
2507
3518
6504
6505
3523
7506
2506
9509
9510
9530
9534
9508
3524
3513
3506
7503
3505
9524
2514
3514
3503
3511
3520
9502
2513
3516
2517
3517
3528
9503
9507
9521
3546
9526
2503
7501
3521
7505
9504
3527
3500
7502
7504
3515
9527
2502
9501
3519
9512
3510
3999
9514
9515
9523
8204 000 6582.4
E_14590_046.eps
081204

VDAF Panel + 2nd Orders


I
VDAF + 2ND ORDERS
-VERTICAL DAF-
-HORIZONTAL DAF-
-2ND ORDER S-
11V DC
I405
I406
3809 10R
I407
F408
2816 RES 220p
I408
6810 BYD33V
I409
I410
3808 15R
I428
3807 15R
1492
FROM :
EMG 0392 A3
EMG STAR 1492 A3
F409
F410
5810 CU15
3810 470K
2812 10n
2809 100u
3832 1K8
I411
2822 100n
3830 47K
I412
3831 4K7
2823 4u7
3823 1K8
2820 100n
3821 47K
I413
3822 4K7
2892 4u7
I425
3824 4K7
I426
3819 4K7
3820 3K3
7820 BC847B
I1
I417
2824 10u
I418
3826 4K7
3827 5K6
I423
7821 BC857B
7818 BC847B
I424
I420
3818 4K7
F411
1693
2818 10n
3828 100K
9800
FROM :
EMG 0393 A4
EMG STAR 1693 A4
I2
2825 1u
I415
3833 4K7
I419
7822 BC847B
7823 BC857B
6812 BZX79-C22
3813 470K
3811 4M7
I414
3814 100K
I427
V_Parabool
I3
7810 STP3NB80
3815 1K
I416
I422
3816 4K7
I421
3812 27K
2813 10u
9806
2814 1n
1490
F406
3998 100R
F407
TO DEFLECTION COIL
1418
F401
F402
I400
3897 1R
9804
I402
F404
FROM :
EMG 0317 A3
EMG STAR 1417 A3
F405
1419
TO 0318 G
DC-SHIFT
9803
5801 CU15
I403
2821 68n
I404
S21975 5800
2800 330p
2803 RES 330p
2890 270p
2891 RES 330p
I429
9805
3805 4M7
DAF OUTPUT
F400
1497
TO dynamic focus input of LOT
3898 2322592
I401
3899 2322592
F403
DAF GND
1491
TO 1491 A3
VDAF SIGNAL
V_Parabool
8204 000 6492.4
E_14600_030.eps 220304

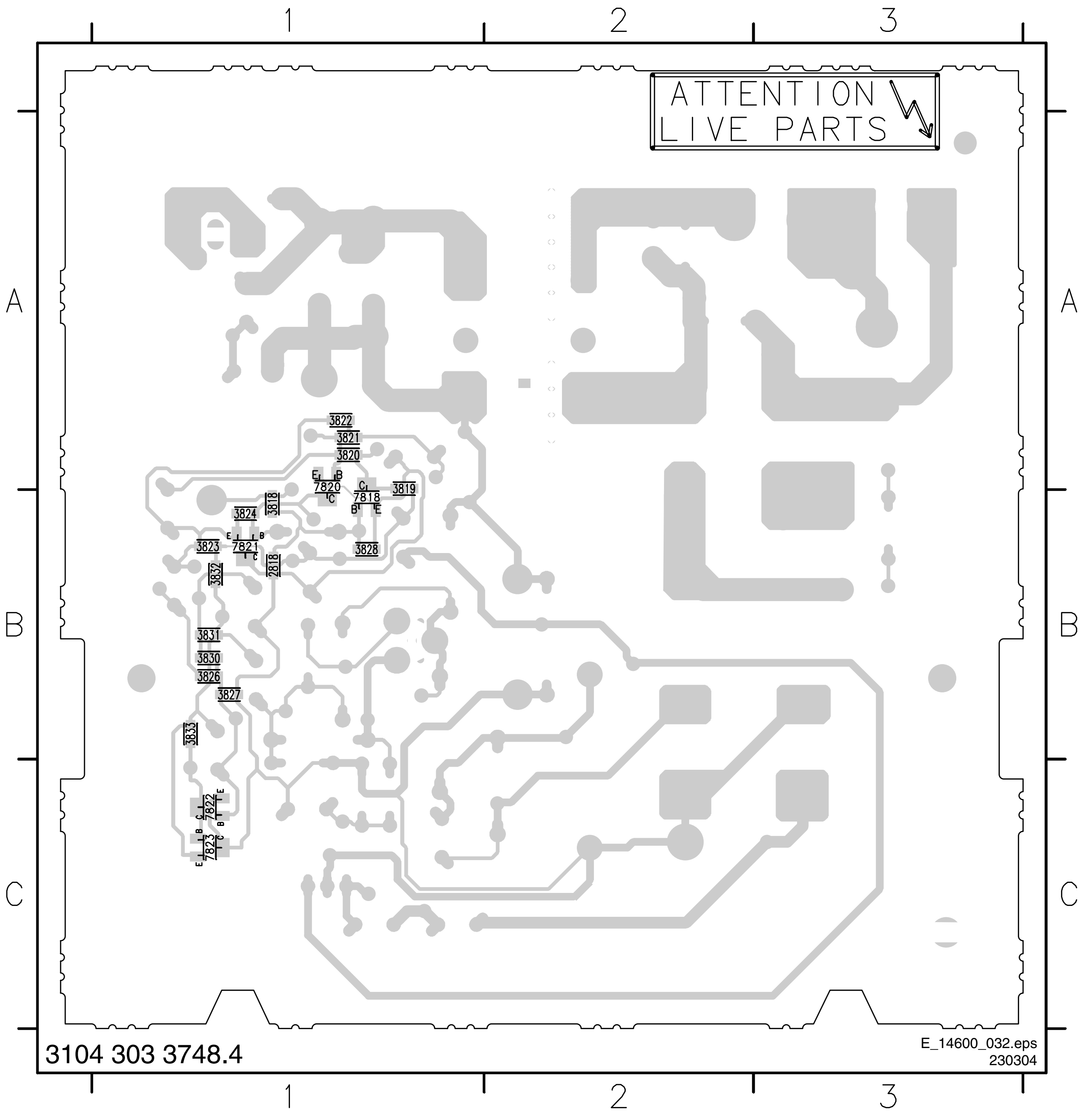
1417	E1
1418	D1
1419	F1
1490	C8
1491	E9
1492	A9
1497	D9
1693	C1
2800	E4
2803	E4
2809	A5
2812	A7
2813	C7
2814	B8
2816	A7
2818	C1
2820	A3
2821	F2
2822	A5
2823	B4
2824	C4
2825	B5
2890	E5
2891	E5
2892	B3
3805	D6
3807	A8
3808	A8
3809	A6
3810	A7
3811	B6
3812	C7
3813	C6
3814	B7
3815	B6
3816	C7
3818	C1
3819	B2
3820	C2
3821	A3
3822	A3
3823	A3
3824	B3
3826	C4
3827	C4
3828	C1
3830	B4
3831	B5
3832	A5
3833	C5
3897	E2
3898	D5
3899	E5
3998	C9
5800	E3
5801	F2
5810	A8
6810	A7
6812	C6
7810	B7
7818	C2
7820	C3
7821	C3
7822	C5
7823	C5
9800	D2
9803	F2
9804	E2
9805	D6
9806	B7
F400	D9
F401	D2
F402	E1
F403	F6
F404	F2
F405	F1
F406	C8
F407	C9
F408	A9
F409	A9
F410	B8
F411	C1
I400	D2
I401	E6
I402	E2
I403	F1
I404	F2
I405	A5
I406	A6
I407	A7
I408	A7
I409	A7
I410	A8
I411	A5
I412	B5
I413	A3
I414	B7
I415	B6
I416	B6
I417	C3
I418	C4
I419	C4
I420	C1
I421	C7
I422	C6
I423	C4
I424	C2
I425	B2
I426	B3
I427	B8
I428	A8
I429	D6

Layout VDAF Panel (Top Side)


1
2
3
A
B
C
ATTENTION
LIVE PARTS
1417
1418
1419
9804
3897
5800
9803
5801
2890
2803
2891
2801
3805
1497
3898
3899
1491
2892
1693
2820
3998
2821
9800
3809
3814
2809
2823
2824
9806
2814
7810
3811
3815
2825
5810
2812
6812
3810
3813
2822
6810
3816
3812
2813
2816
1490
3808
3807
1492
3104 303 3748.4
E_14600_031.eps
230304

1417	A1
1418	A1
1419	A1
1490	C2
1491	A3
1492	C3
1497	A3
1693	B3
2800	A3
2803	A3
2809	B3
2812	C2
2813	C3
2814	B3
2816	C3
2820	B3
2821	B1
2822	B3
2823	B3
2824	B3
2825	B3
2890	A3
2891	A3
2892	A3
3805	A3
3807	C3
3808	C3
3809	B3
3810	B3
3811	B3
3812	C3
3813	C3
3814	B3
3815	B3
3816	C3
3897	A2
3898	A3
3899	A3
3998	B1
5800	A2
5801	A1
5810	B2
6810	C2
6812	B3
7810	B3
9800	B3
9803	A2
9804	A2
9805	A3
9806	B2

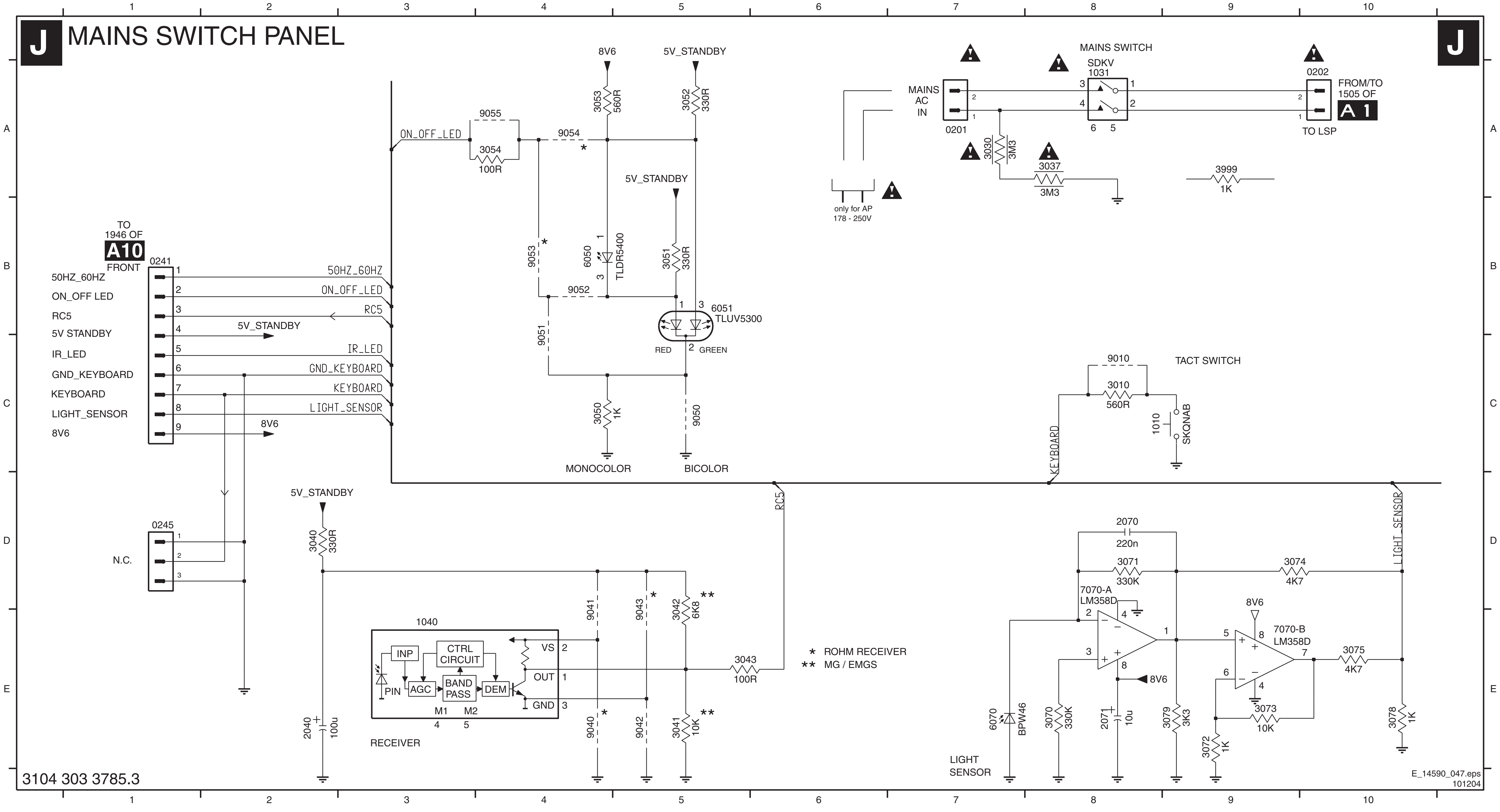
Layout VDAF Panel (Bottom Side)


1
2
3
A
B
C
ATTENTION
LIVE PARTS
3822
3821
3820
7820
7818
3819
3824
3818
3823
7821
3828
3832
2818
3831
3830
3826
3827
3833
7822
7823
3104 303 3748.4
E_14600_032.eps
230304

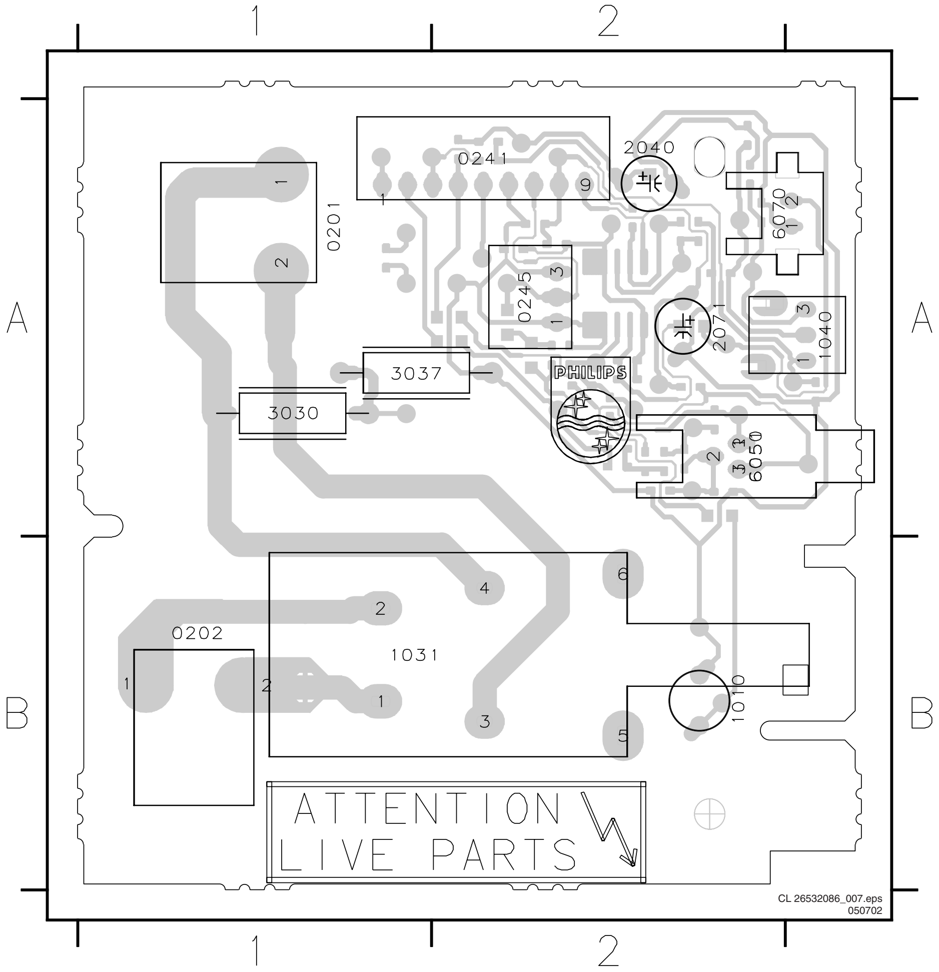
2818	B1
3818	B1
3819	A1
3820	A1
3821	A1
3822	A1
3823	B1
3824	B1
3826	B1
3827	B1
3828	B1
3830	B1
3831	B1
3832	B1
3833	B1
7818	B1
7820	A1
7821	B1
7822	C1
7823	C1

Mains Switch Panel (PV02 Styling)

0201	A7
0202	A10
0241	B1
0245	D1
1010	C8
1031	A8
1040	E3
2040	E2
2070	D8
2071	E8
3010	C8
3030	A7
3037	A8
3040	D2
3041	E5
3042	E5
3043	E5
3050	C4
3051	B5
3052	A5
3053	A4
3054	A4
3070	E8
3071	D8
3072	E9
3073	E9
3074	D9
3075	E10
3078	E10
3079	E9
3999	A9
6050	B4
6051	B5
6070	E7
7070-A	D8
7070-B	E9
9010	C8
9040	E4
9041	E4
9042	E5
9043	E5
9050	C5
9051	C4
9052	B4
9053	B4
9054	A4
9055	A4

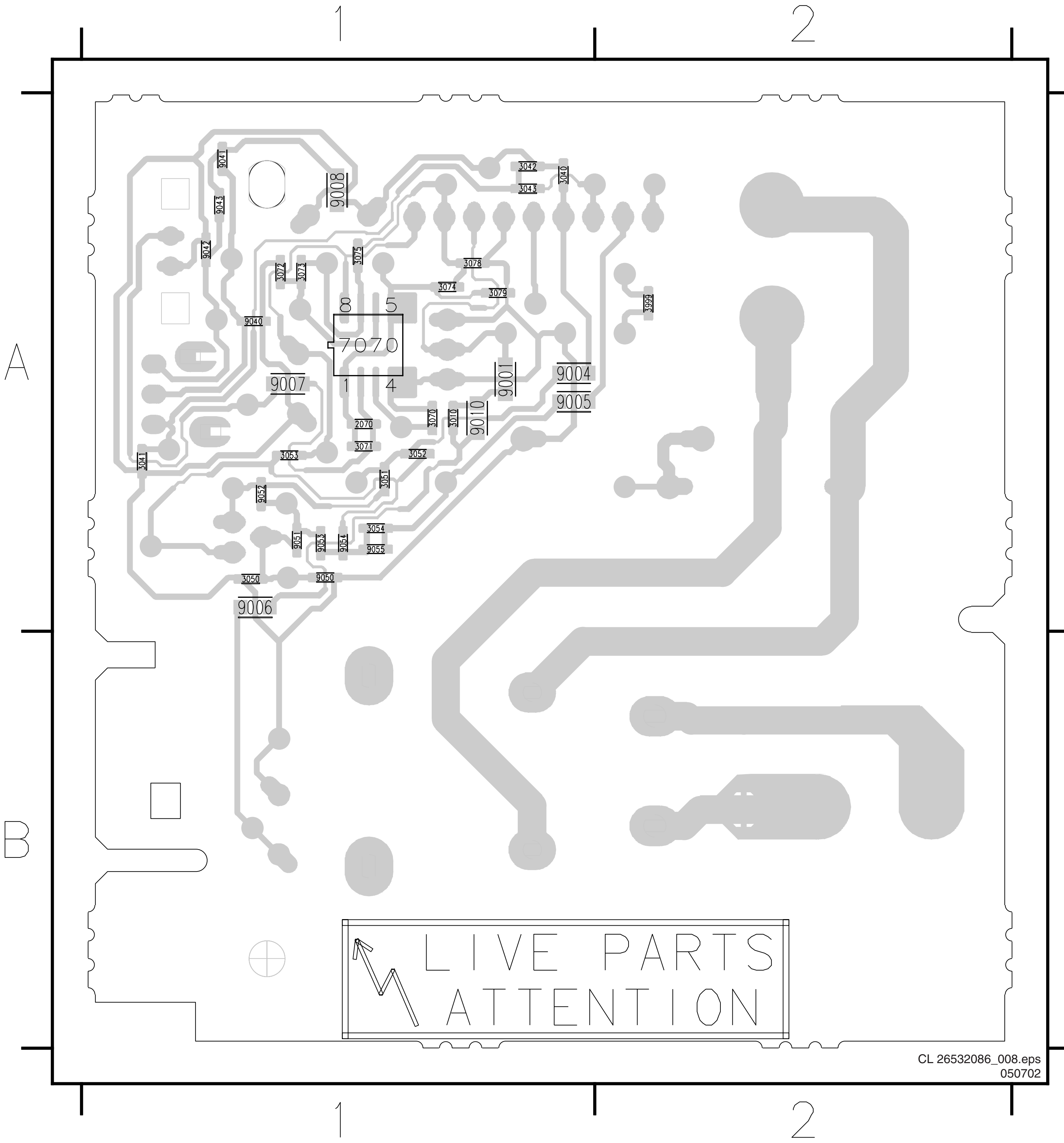

J
MAINS SWITCH PANEL
J
8V6
5V_STANDBY
3053 560R
3052 330R
9055
ON_OFF_LED
9054
3054 100R
5V_STANDBY
TO 1946 OF
A10
FRONT
0241
50HZ_60HZ
ON_OFF LED
RC5
5V STANDBY
IR_LED
GND_KEYBOARD
KEYBOARD
LIGHT_SENSOR
8V6
50HZ_60HZ
ON_OFF_LED
RC5
5V_STANDBY
IR_LED
GND_KEYBOARD
KEYBOARD
LIGHT_SENSOR
8V6
9053
6050 TLDR5400
3051 330R
9052
6051 TLUV5300
RED
GREEN
9051
3050 1K
9050
MONOCOLOR
BICOLOR
MAINS SWITCH
SDKV 1031
MAINS AC IN
0201
0202
FROM/TO 1505 OF
A1
TO LSP
3030 3M3
3037 3M3
3999 1K
only for AP 178 - 250V
9010
TACT SWITCH
3010 560R
1010 SKQNAB
KEYBOARD
0245
N.C.
5V_STANDBY
3040 330R
RC5
LIGHT_SENSOR
9041
9043
3042 6K8
1040
INP
CTRL CIRCUIT
AGC
BAND PASS
DEM
PIN
VS
OUT
GND
M1
M2
RECEIVER
3043 100R
* ROHM RECEIVER
** MG / EMGS
2040 100u
9040
9042
3041 10K
2070 220n
3071 330K
3074 4K7
7070-A LM358D
8V6
7070-B LM358D
3075 4K7
3073 10K
8V6
6070 BPW46
LIGHT SENSOR
3070 330K
2071 10u
3079 3K3
3072 1K
3078 1K
3104 303 3785.3
E_14590_047.eps 101204

Layout Mains Switch Panel (PV02 Styling) (Top Side)


1
2
A
B
0241
9
1
2040
6070
1
2
0201
0245
3
1
2071
1040
3
1
3037
3030
PHILIPS
6050
2
3
0202
1031
2
4
6
1
3
5
1010
ATTENTION
LIVE PARTS
CL 26532086_007.eps
050702

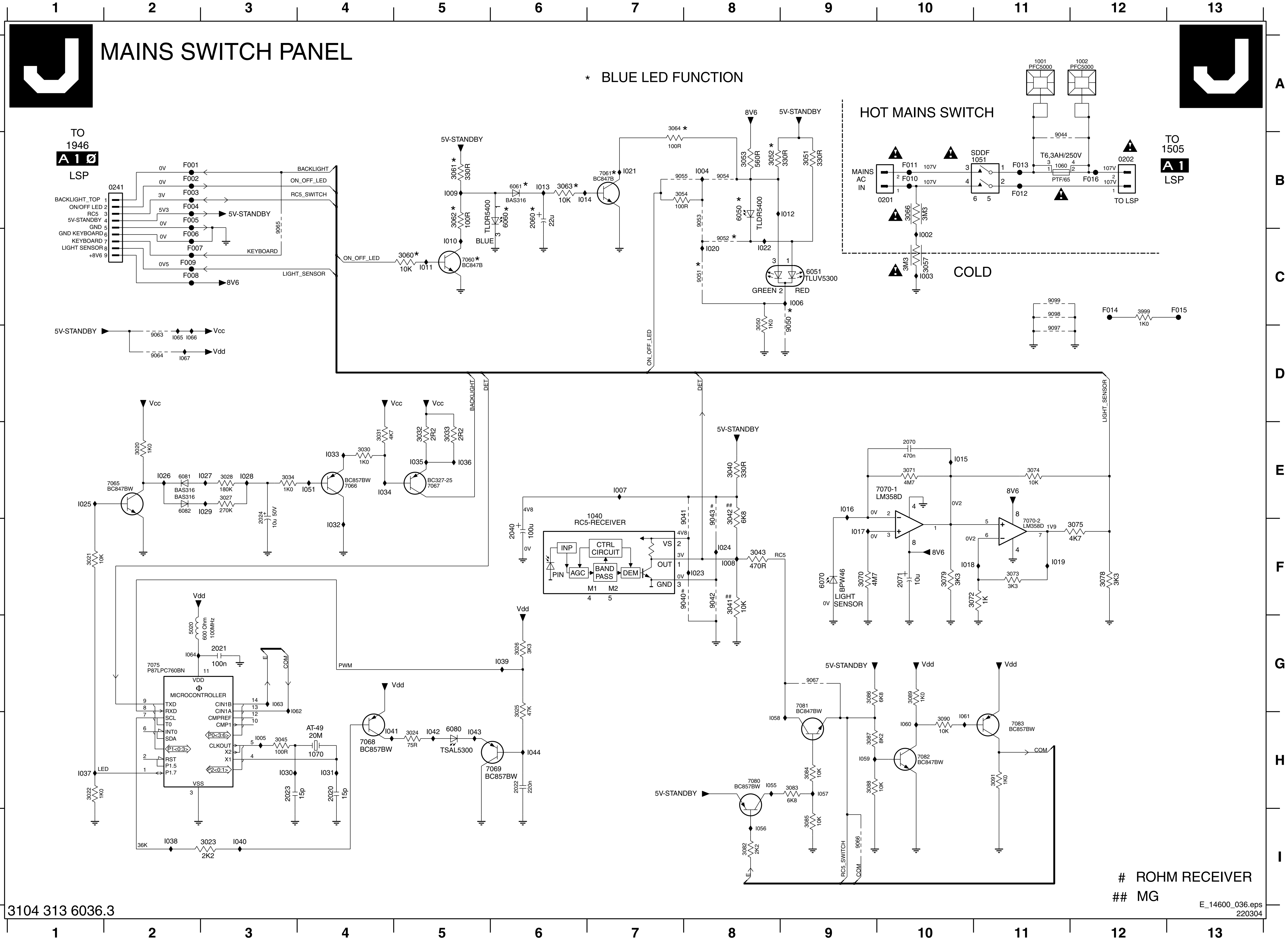
0201	A1
0202	B1
0241	A2
0245	A2
1010	B2
1031	B2
1040	A2
2040	A2
2071	A2
3030	A1
3037	A2
6050	A2
6051	A2
6070	A2

Layout Mains Switch Panel (PV02 Styling) (Bottom Side)


1
2
A
B
9008
9041
9043
9042
3072
3073
3075
3042
3043
3040
3078
3074
3079
3999
9040
8
5
7070
1
4
9007
9001
9004
9005
9010
3070
3010
2070
3071
3053
3052
3051
3041
9052
3054
3055
9051
9053
9054
3050
9050
9006
LIVE PARTS
ATTENTION
CL 26532086_008.eps
050702

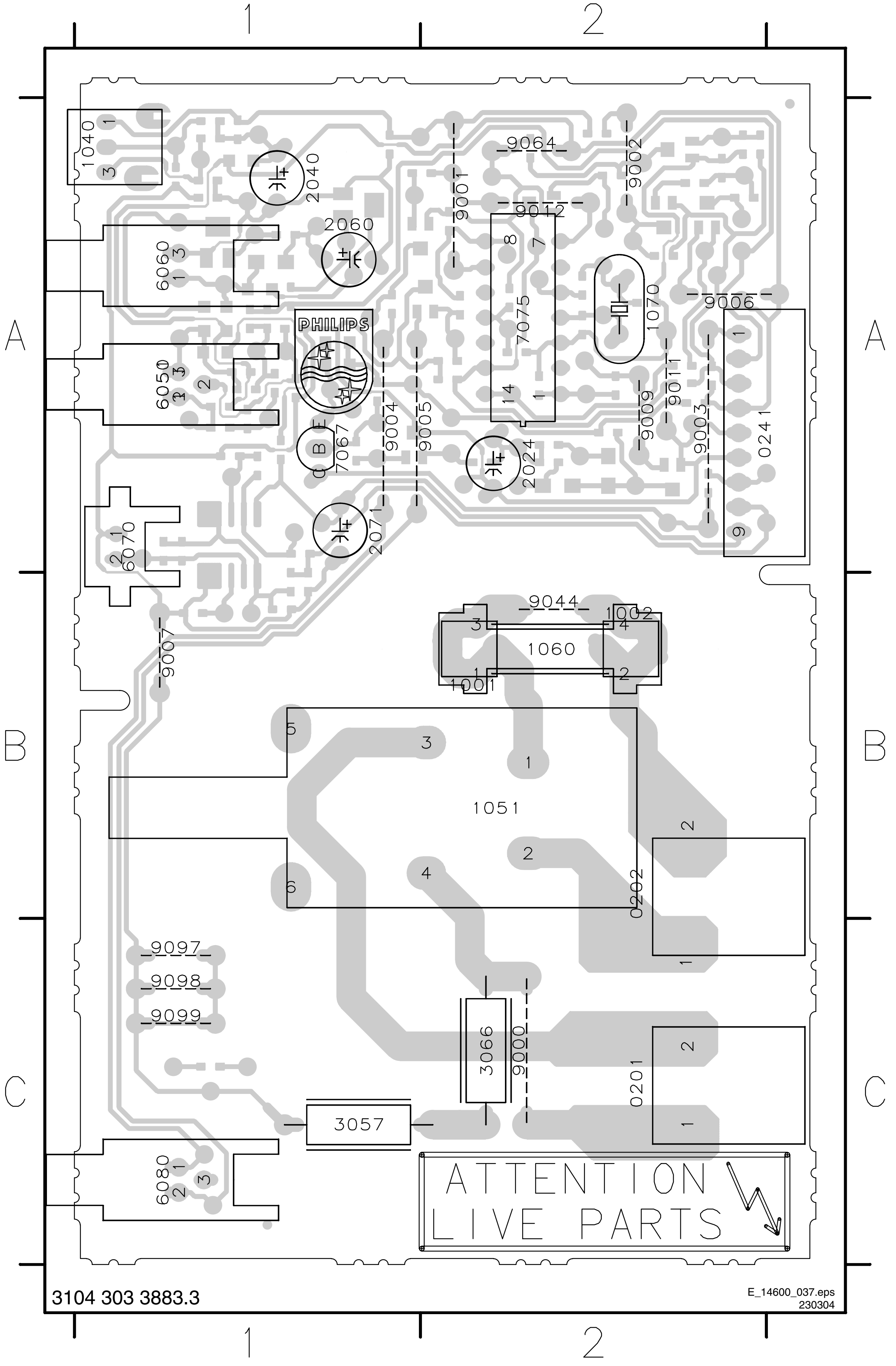
0201	A2
0202	B2
0241	A2
0245	A1
1010	B1
1031	B1
1040	A1
2040	A1
2070	A1
2071	A1
3010	A1
3030	A2
3037	A2
3040	A1
3041	A1
3042	A1
3043	A1
3050	A1
3051	A1
3052	A1
3053	A1
3054	A1
3070	A1
3071	A1
3072	A1
3073	A1
3074	A1
3075	A1
3078	A1
3079	A1
3999	A2
6050	A1
6051	A1
6070	A1
7070	A1
9001	A1
9004	A1
9005	A1
9006	A1
9007	A1
9008	A1
9010	A1
9040	A1
9041	A1
9042	A1
9043	A1
9050	A1
9051	A1
9052	A1
9053	A1
9054	A1
9055	A1

Mains Switch Panel (FL13B Styling)


J
MAINS SWITCH PANEL
* BLUE LED FUNCTION
HOT MAINS SWITCH
COLD
TO 1946 A10 LSP
TO 1505 A1 LSP
MAINS AC IN
TO LSP
0201
0202
0241
BACKLIGHT_TOP
ON/OFF LED
RC5
5V-STANDBY
GND
GND KEYBOARD
KEYBOARD
LIGHT SENSOR
+8V6
BACKLIGHT
ON_OFF_LED
RC5_SWITCH
KEYBOARD
LIGHT_SENSOR
DET
5V-STANDBY
8V6
Vcc
Vdd
1001 PFC5000
1002 PFC5000
SDDF 1051
T6,3AH/250V
1060 PTF/65
1040 RC5-RECEIVER
INP
CTRL CIRCUIT
PIN
AGC
BAND PASS
DEM
VS
OUT
GND
7075 P87LPC760BN
MICROCONTROLLER
TXD
RXD
SCL
T0
INT0
SDA
RST
P1.5
P1.7
VDD
VSS
CIN1B
CIN1A
CMPREF
CMP1
CLKOUT
X2
X1
PWM
LED
COM
AT-49 20M 1070
7068 BC857BW
7069 BC857BW
6080 TSAL5300
6050 TLDR5400
6060 TLDR5400
6051 TLUV5300
GREEN
RED
BLUE
7070-1 LM358D
7070-2 LM358D
6070 BPW46 LIGHT SENSOR
7060 BC847B
7061 BC847B
7065 BC847BW
7066 BC857BW
7067 BC327-25
7080 BC857BW
7081 BC847BW
7082 BC847BW
7083 BC857BW
# ROHM RECEIVER
## MG
3104 313 6036.3
E_14600_036.eps
220304

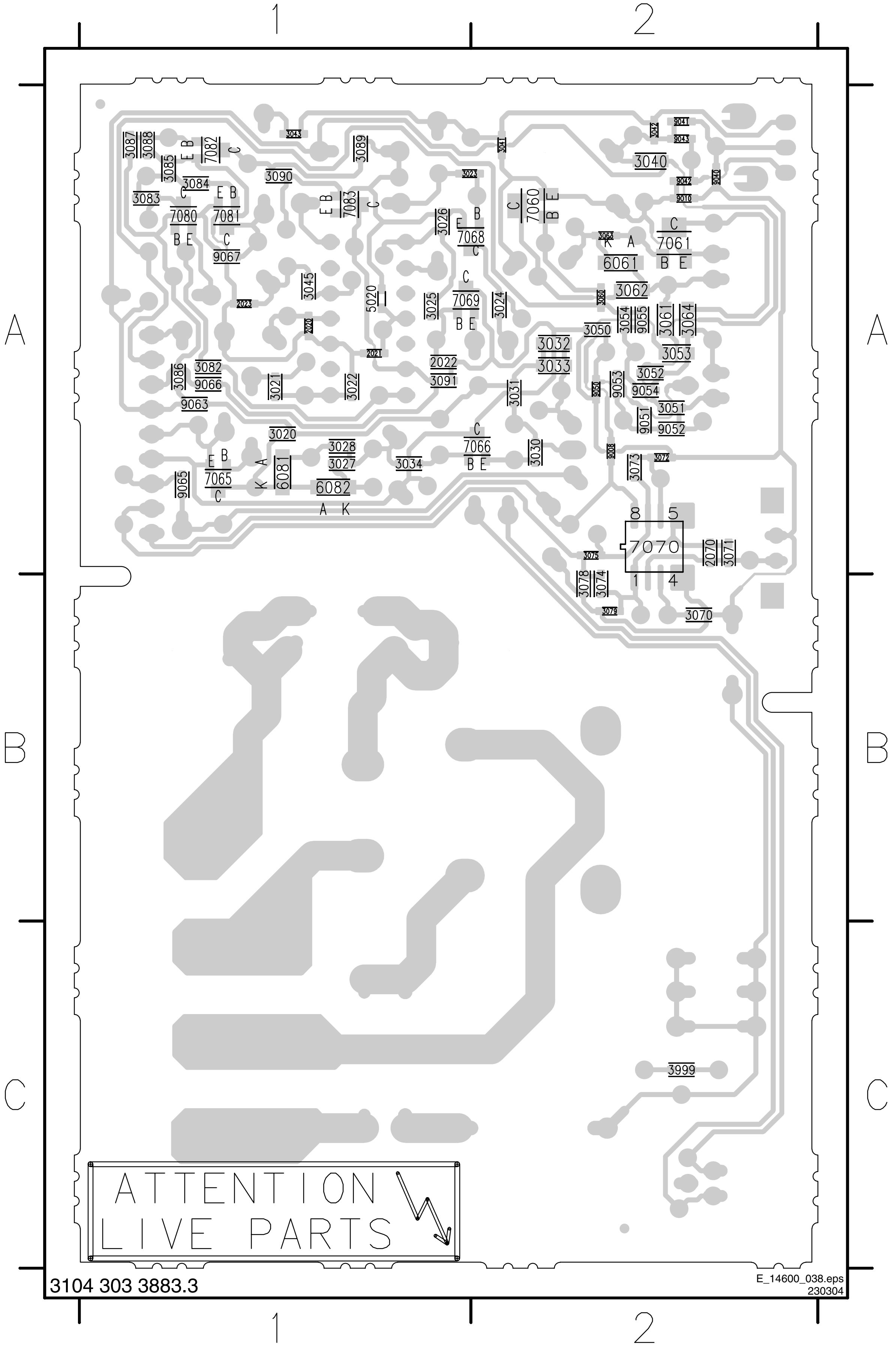
0201	B10
0202	B12
0241	B2
1001	A11
1002	A12
1040	E6
1051	B11
1060	B11
1070	H4
2020	H4
2021	G3
2022	H6
2023	H3
2024	E3
2040	F6
2060	B6
2070	E10
2071	F10
3020	E2
3021	F1
3022	H1
3023	I3
3024	H5
3025	G6
3026	G6
3027	E3
3028	E3
3030	E4
3031	E4
3032	E5
3033	E5
3034	E3
3040	E8
3041	F8
3042	E8
3043	F8
3045	H3
3050	C8
3051	B9
3052	B8
3053	B8
3054	B7
3057	C10
3060	C5
3061	B5
3062	B5
3063	B6
3064	A7
3066	B10
3070	F9
3071	E10
3072	F11
3073	F11
3074	E11
3075	F12
3078	F12
3079	F10
3082	I8
3083	H9
3084	H9
3085	I9
3086	G9
3087	H9
3088	H9
3089	G10
3090	H10
3091	H11
3999	C12
5020	G2
6050	B8
6051	C9
6060	B6
6061	B6
6070	F9
6080	H5
6081	E2
6082	E2
7060	C5
7061	B7
7065	E2
7066	E4
7067	E5
7068	H4
7069	H6
7070-1	E9
7070-2	F11
7075	G2
7080	H8
7081	G9
7082	H10
7083	H11
9040	F8
9041	E8
9042	F8
9043	E8
9044	B11
9050	C9
9051	C8
9052	C8
9053	B8
9054	B8
9055	B7
9063	D2
9064	D2
9065	B3
9066	I9
9067	G9
9097	D11
9098	C11
9099	C11
F001	B2
F002	B2
F003	B2
F004	B2
F005	B2
F006	C2
F007	C2
F008	C2
F009	C2
F010	B10
F011	B10
F012	B11
F013	B11
F014	C12
F015	C13
F016	B12
I002	C10
I003	C10
I004	B8
I005	H3
I006	C9
I007	E7
I008	F8
I009	B5
I010	C5
I011	C5
I012	B9
I013	B6
I014	B6
I015	E10
I016	E9
I017	F9
I018	F10
I019	F11
I020	C8
I021	B7
I022	C8
I023	F8
I024	F8
I025	E1
I026	E2
I027	E3
I028	E3
I029	E3
I030	H3
I031	H4
I032	F4
I033	E4
I034	E4
I035	E5
I036	E5
I037	H1
I038	I2
I039	G6
I040	I3
I041	H4
I042	H5
I043	H5
I044	H6
I051	E4
I055	H8
I056	I8
I057	H9
I058	H8
I059	H9
I060	H10
I061	H10
I062	G3
I063	G3
I064	G2
I065	D2
I066	D2
I067	D2

Layout Mains Switch Panel (FL13B Styling) (Top Side)


1
2
A
B
C
1040
2040
2060
6060
6050
PHILIPS
7067
9004
9005
2071
6070
9007
9064
9001
9012
7075
2024
1070
9002
9006
9009
9011
9003
0241
9044
1002
1060
1001
1051
0202
9097
9098
9099
3066
9000
0201
3057
6080
ATTENTION
LIVE PARTS
3104 303 3883.3
E_14600_037.eps
230304

0201	C2
0202	B2
0241	A2
1001	B1
1002	B2
1040	A1
1051	B1
1060	B1
1070	A2
2024	A2
2040	A1
2060	A1
2071	A1
3057	C1
3066	C2
6050	A1
6051	A1
6060	A1
6070	B1
6080	C1
7067	A1
7075	A2
9000	C2
9001	A2
9002	A2
9003	A2
9004	A1
9005	A2
9006	A2
9007	B1
9009	A2
9011	A2
9012	A2
9044	B2
9064	A2
9097	C1
9098	C1
9099	C1

Layout Mains Switch Panel (FL13B Styling) (Bottom Side)


1
2
A
B
C
3040
7061
6061
3062
7060
7068
7069
7066
7070
3999
ATTENTION
LIVE PARTS
3104 303 3883.3
E_14600_038.eps
230304

2020	A1
2021	A1
2022	A1
2023	A1
2070	A2
3020	A1
3021	A1
3022	A1
3023	A1
3024	A2
3025	A1
3026	A1
3027	A1
3028	A1
3030	A2
3031	A2
3032	A2
3033	A2
3034	A1
3040	A2
3041	A2
3042	A2
3043	A1
3045	A1
3050	A2
3051	A2
3052	A2
3053	A2
3054	A2
3060	A2
3061	A2
3062	A2
3063	A2
3064	A2
3070	B2
3071	A2
3072	A2
3073	A2
3074	B2
3075	A2
3078	B2
3079	B2
3082	A1
3083	A1
3084	A1
3085	A1
3086	A1
3087	A1
3088	A1
3089	A1
3090	A1
3091	A1
3999	C2
5020	A1

Personal Notes:

E_06532_013.eps
131004

8. Alignments

Index of this chapter:

8.1 General Alignment Conditions
8.2 Hardware Alignments
8.3 Software Alignments
8.4 Option Settings

8.1 General Alignment Conditions

8.1.1 Start Conditions

Perform all electrical adjustments under the following conditions:

- Power supply voltage: 230 V_ac / 50 Hz (± 10 %).
- Connect the set to the mains via an isolation transformer with low internal resistance.
- Allow the set to warm up for approximately 20 to 30 minutes.
- Measure the voltages and waveforms in relation to chassis ground (with the exception of the voltages on the primary side of the power supply).
  Caution: never use the cooling fins/plates as ground.
- Test probe: Ri > 10 Mohm, Ci < 20 pF.
- Use an isolated trimmer/screwdriver to perform the alignments.

Perform all electrical adjustments with the following start settings (for all CRTs):

- Set LIGHT SENSOR "off", by setting ACTIVE CONTROL to "off" with the remote control.
- Set CONTRAST to "75", BRIGHTNESS to "42" and COLOUR to "54" (via PICTURE menu).
- Set COLOUR ENHANCEMENT to "off" (via PICTURE menu).
- Set DIGITAL OPTIONS to "Pixel Plus" (via PICTURE menu), unless otherwise stated (for sets without "Pixel Plus" (= Eagle), set to "Natural Motion").
- Set DYNAMIC CONTRAST to "off" (via PICTURE menu).
- Set CATHODE DRIVE at "15" (via SAM - Alignments - General - Drive - Cathode).

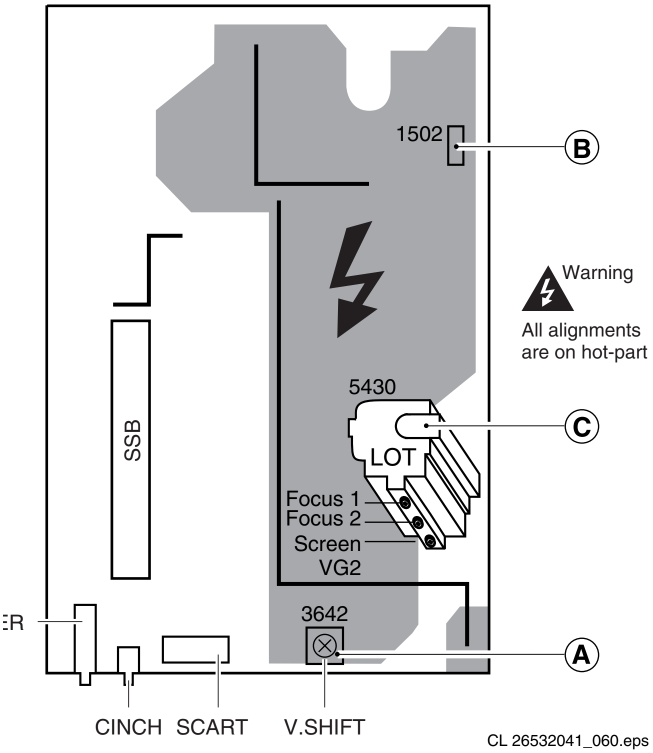
8.1.2 Adjustment Sequence

Use the following adjustment sequence:

1. Set the correct TV-set "options" (after storing, restart the set!).
2. Rough adjustment of "Vg2".
3. Rough adjustment of "Focus".
4. Rough adjustment of "Geometry".
5. Allow the set to warm up.
6. Accurate adjustment of "Vg2" and "Focus".
7. Accurate adjustment of "Geometry".
8. Software alignments (cut-off, cathode drive, peak white, white drive, etc).

8.2 Hardware Alignments

Note: The Service Alignment Mode (SAM) is described in chapter 5 of the Service Manual. Menu navigation is done with the "CURSOR UP, DOWN, LEFT or RIGHT" keys of the remote control (RC) transmitter.



CL 26532041_060.eps
110402

Figure 8-1 Top-view LSP

8.2.1 Vg2 Adjustment

In the frame-blanking period of the R, G, and B signals applied to the CRT, the "HOP" video processor inserts a measuring pulse with different DC levels. Measure the black level pulse during the vertical flyback at the RGB cathodes of the CRT.

1. Go, via the MENU key, to the normal user menu, select "PICTURE", and set "CONTRAST" and "BRIGHTNESS" to **"0"**.
2. Activate the SAM.
3. Connect the RF output of a pattern generator to the antenna input. Test pattern is a "black" picture (blank screen on CRT without any OSD info).
4. Set the channel of the oscilloscope to 20 V/div and the time base to 20 us/div. Use external triggering on the vertical pulse
   Caution: use a trigger point at the "**cold**" side!.
5. Ground the scope at the CRT panel ("**cold**" side) and connect a 10:1 probe to one of the cathodes of the picture tube socket (see diagram F).
6. Measure the cut-off pulse during first full line after the frame blanking. You will see two pulses, one being the cut-off pulse and the other being the white drive pulse. Choose the one with the lowest value; this is the cut-off pulse.
7. Select the cathode with the highest V_dc value for the alignment. Adjust the V_CUTOFF of this gun with the SCREEN (lower) potentiometer on the LOT to the correct DC-value, tolerance is +/- 3 V_dc (align the Vg2 potmeter first till the flyback lines are just visible and then slowly turn back until they are gone).
   - 28 inch (16:9):
     - Philips (LPD): 160 V.
   - 29 inch (4:3):
     - Philips (LPD): 160 V.
     - Samsung: 160 V.
   - 32 inch (16:9):
     - Philips (LPD): 160 V.
     - Panasonic (MEC): 170 V.

8. Restore "CONTRAST" to "75" and "BRIGHTNESS" to "42".

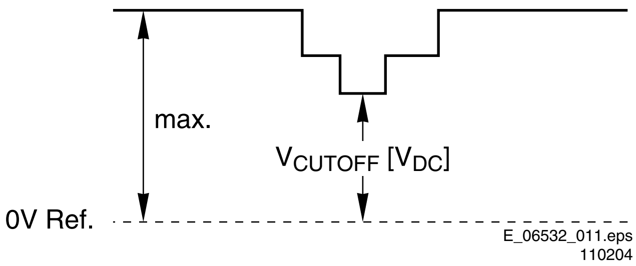


Figure 8-2 Waveform Vg2 alignment

8.2.2 Focus alignment

Notes:
- Tune the set to a "circle with crosshatch" test pattern (use an external video pattern generator).
- Choose picture mode "NATURAL" with the "SMART PICTURE" button on the remote control transmitter.
- **ELDOR** LOT outline:
  - Focus 1 (F1) = Static alignment (black wire).
  - Focus 2 (F2) = Dynamic alignment (red wire).

Focus method for Philips 32 inch tube with bleeder gun
You can recognize a CRT with bleeder gun by its type number.
Example:
- W76ERF**052**X044= with bleeder gun
- W76ERF**042**X044= with standard gun.

You can also recognize it by the **ceramic** rectangular plate (this is the bleeder resistance) you will see inside the gun (viewed from above).

1. Start the alignment with the STATIC focus (upper potmeter) turned to the **left** and the DYNAMIC focus (middle potmeter) to the **right**.
2. Adjust the DYNAMIC focus until the horizontal lines at the centre of the screen have minimum width, without introducing a visible haze.
3. Adjust the STATIC focus until the vertical lines at the sides of the screen have minimum width, without introducing a visible haze.
4. Adjust the DYNAMIC focus until the horizontal lines at the centre of the screen have minimum width, without introducing a visible haze.
5. Check overall spot performance and repeat steps 3 and 4 to achieve the best result.

Focus method for all other tubes
1. Start with the STATIC and DYNAMIC focus potentiometers on the LOT at **midway**.
2. Adjust the STATIC focus until the vertical lines at the sides of the screen have minimum width, without introducing a visible haze.
3. Adjust the DYNAMIC focus until the horizontal lines at the centre of the screen have minimum width, without introducing a visible haze.
4. Check overall spot performance and repeat steps 2 and 3 to achieve the best result: a compromise between minimal visible haze at the middle of the screen and sharp lines at the edges of the screen.

8.3 Software Alignments

8.3.1 Introduction

With the software alignments, it is possible to align the Geometry, White Tone, and Tuner IF settings.
Put the set in the SAM (see chapter 5). The SAM menu will now appear on the screen. Select, via **ALIGNMENTS**, one of the sub-menus. They are explained below in the sequence of the sub-menus.

Notes:
- All changes to menu items and alignments are stored automatically, except the option codes. They must be stored manually.
- If the OPTION CODES have been changed **and stored**, the set has to be switched "OFF" and "ON" using the mains switch to activate the new settings (when switching via Standby, the option code settings are NOT read by the microprocessor).
- If an empty EAROM (permanent memory) is detected, all settings are set to pre-programmed default values.

8.3.2 GENERAL

VG2 TEST PATTERN
In this sub-menu, you can turn "On" the OSD feedback for the Vg2 alignment (see chapter 8.2.1).

ADJUST PEAK WHITE LIMITER
Fixed setting: "9".

EHT COMPENSATION
Enter value "9" for the 28, 29 and 32 inch picture tubes
Enter value "10" for the 36 inch picture tubes.

SOFT CLIPPER
Fixed setting: “Pwl + 0%”

LUMA GAIN
Fixed setting is “1”.

IF AFC
Supply, via an external video generator (e.g. PM5518), a TV signal with strength of at least 1 mV and a frequency of 475.25 MHz. Use system BG if possible, otherwise match the system of your generator with the received signal in the set.

Alignment procedure:
1. Go to the user "Installation" menu.
2. Select "Manual Installation".
3. Tune the TV-set to the system and frequency described above via "Search" - "475" - "OK".
4. If the frequency, showed in the line "Fine tune", is between 475.18 MHz and 475.31 MHz, you **do not** need to re-adjust the "IF AFC".
5. If not, adjust the frequency in the "Fine tune" line to 475.25 MHz and "Store" the program (this is **very important** because this will disable the AFC algorithm).
6. Now go to the SAM and select ALIGNMENTS - GENERAL - IF AFC.
7. During the IF AFC parameter adjustment, one can see OSD feedback in the top of the screen.
8. This OSD feedback can give 4 kind of messages:

Table 8-1 OSD feedback of AFC alignment

AFC-window	AFC-frequency vs. reference
Out	High
In	High
In	Low
Out	Low

1. The first item (IN or OUT) informs you whether you are in or out the AFC-window.
2. The second item (HIGH or LOW) informs you about whether the AFC-frequency is too high or too low.
3. First, you must align the IF AFC parameter such that you come into the AFC-window (= IN).
4. Then you must look for the point where the IF AFC parameter changes from HIGH to LOW. This level is the value you are looking for.
5. After adjustment, STORE the value.
6. Now return to the user "Installation" menu.
7. Select "Manual Installation" - "Search" - "475" - "OK" and "Store". This will set the AFC "ON" again.

Service tip: If you do not trust the frequency accuracy of your service generator, connect it to a "good" TV set and check it with the "Fine tune"-line.

IF LPRIME AFC

Use the same procedure as for the IF AFC alignment, but set the video generator to SECAM L/L' (only necessary for countries that have or can receive this system).

TUNER AGC

1. Set the external pattern generator to a colour bar video signal and connect the RF output to the aerial input. Set the amplitude to 10 mV and set the frequency to 475.25 MHz.
2. Connect a DC multimeter between pin 1 and the shielding of the Tuner (item 1200 on the LSP).
3. Adjust the TUNER AGC value (default value is 25) with the LEFT/RIGHT cursor keys until the voltage at pin 1 of the tuner lies between 3.8 and 2.3 V.
4. STORE the alignment.

TUNER AGC TUNER 2 (only for sets with DW/PIP)

Use the same procedure as described above (under TUNER AGC) with the set switched to the DW source. Measure on pin 1 of the DW Tuner (this is only applicable for sets with 2-tuner DW execution).

BLEND INTENSITY

Use this alignment when you replace the microcontroller or the HOP. It aligns the level of transparency of the menu-picture blended into the main-picture.
Position the "BRIGHTNESS", "CONTRAST", and "COLOUR" setting in the middle position (via the user PICTURE menu).

1. Apply a signal with a 100 % white video-pattern.
2. Connect an oscilloscope to pin 8 of connector 1298 of the CRT panel and measure the Red output level.
3. Align the BLEND INTENSITY parameter such, that the blended signal is 65 % of the black-white amplitude. In practice, this is about 1.3 V (blended signal) versus 2 V (full white signal).
4. The parameter can be adjusted in between **"0"** and **"31"**.

8.3.3 DRIVE (Colour Alignments)

Note: Switch off all (available) colour-influencing features (e.g. set the TV in ECO-mode).

Method 1 (with colour analyser):

1. Set, via the user menu, the "Contrast" to "100".
2. In SAM, select TEST PATTERN and turn it ON. During the following alignments, you will see a white block in the middle of the screen. Measure with the colour analyser on this area.
3. Set, via the user menu, the "Brightness" to a value between 3.0 and 5.0 Nit (rough setting).
4. Select CATHODE and enter the value "15" (for all picture tubes).
5. Set the RED, GREEN and BLUE default values to "32".
6. RED BL OFFSET: the Black Level can be aligned very precisely here. The default value is "7".
7. GREEN BL OFFSET: the Black Level can be aligned very precisely here. The default value is "7".
8. Select a COLOR TEMPERATURE (e.g. COOL, NORMAL, or WARM).
9. Adjust the white level via RED, GREEN, and BLUE, according to the values in table "White levels".

Table 8-2 White levels

ColourTemp. (K)	Cool (10200)	Normal (8700)	Warm (6500)
X	280	289	313
Y	287	299	329

Method 2 (without colour analyser):

If you do not have a colour analyser, you can use the default values. This is the next best solution. The default values are average values coming from production (statistics).

1. Set, via the user menu, the "Contrast" to "100".
2. Select CATHODE and enter the value "15" (for all picture tubes).
3. RED BL OFFSET: the Black Level can be aligned very precisely here. The default value is "7".
4. GREEN BL OFFSET: the Black Level can be aligned very precisely here. The default value is "7".
5. Select a COLOUR TEMPERATURE (e.g. COOL, NORMAL, or WARM).
6. Set the RED, GREEN and BLUE default values according to the values in the "Tint settings" table.

Table 8-3 Tint settings

	Δ Cool	Normal	Δ Warm
R	-1	37	+ 3
G	0	30	0
B	+ 4	31	- 10

8.3.4 LUM. DEL. (Luminance Delay)

With this alignment, you place the luminance information exactly on the chrominance information (brightness is pushed onto the colour). Use a colour bar/grey scale pattern as test signal.

- **LUM. DELAY PAL BG:** Apply a PAL BG colour bar/grey scale pattern as a test signal. Adjust this parameter until the transients of the colour part and black and white part of the test pattern are at the same position. Default value = ”8”.
- **LUM. DELAY PAL I:** Apply a PAL I colour bar/grey scale pattern as a test signal. Adjust this parameter until the transients of the colour part and black and white part of the test pattern are at the same position. Default value = “10”.
- **LUM. DELAY SECAM:** Apply a SECAM colour bar/grey scale pattern as a test signal. Adjust this parameter until the transients of the colour part and black and white part of the test pattern are at the same position. Default value = “9”.
- **LUM. DELAY BYPASS:** apply a NTSC colour bar/ greyscale pattern as a test signal. Adjust this value until the transients of the colour and black & white part of the test area are at the same position. Default value = “7”.

8.3.5 GEO-NOR (Normal Geometry)

Note: Use for all geometry alignments an **external** pattern generator with a geometry pattern (e.g. crosshatch).

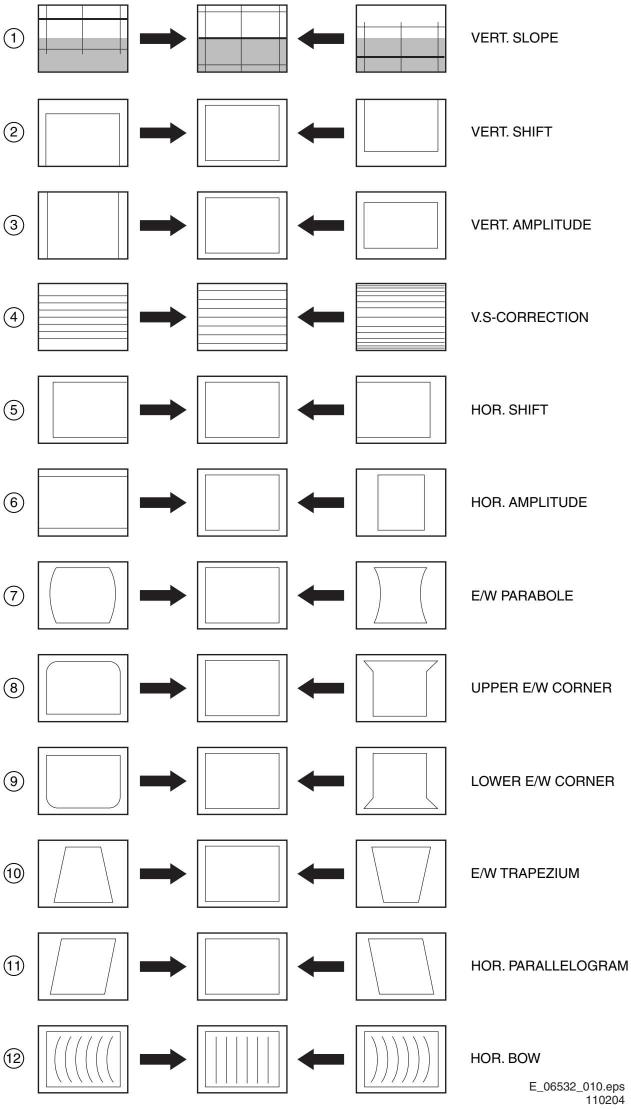


Figure 8-3 Geometry Alignments

Service tip: When the set is equipped with a rotation coil, use this menu item to check its correct alignment. If alignment is not correct, go to the INSTALLATION menu, choose SETUP, press OK, and choose PICTURE TILT. With the use of a crosshatch test pattern, align it to a correct horizontal picture.

V. SLOPE

Align the zero crossing of the frame deflection to the mechanical middle of the picture tube.

1. First, set the start conditions for 16:9 sets according to the table “Vertical S-Correction default value”. Position the boundary-stripes of the test pattern on the edges of the picture tube.
2. Align V. SLOPE (during alignment, the lower half of the picture is blanked) such, that the middle line of the test pattern is matched with the edge of the pattern transient in the middle of the picture.
3. Repeat the alignment if necessary.

Table 8-4 Vertical S-Correction default value

Picture Tube	V. S-Correction default value
28" RF 16:9 Mk2	16
29" RF 4:3	32
32" RF 16:9	16
32" RF 16:9 Bleeder	16
32" RF 16:9 EMEC	27
32" RF 16:9 DOD-2	20

V. SHIFT AND V. AMPLITUDE (vertical alignment)

Align the vertical centre and height of the picture.

1. Use V. AMPLITUDE to align the vertical amplitude so that the entire test pattern is visible.
2. Set V. SHIFT to value "32".
3. Connect a voltmeter (V_dc) between R3624 and "hot" ground.
4. Adjust the DC voltage to **"0"** with potmeter R3642 (see figure 8-1).
5. Use V. SHIFT again to align the test pattern roughly vertically in the middle.
6. Repeat the alignment if necessary.

V. S-CORRECTION

Align for equal blocks on top, middle, and bottom of the picture tube.

Align V. S-CORRECTION such that a block at the top (or bottom) of the picture has the same height as a block in the middle of the picture.

H. SHIFT AND H. AMPLITUDE (horizontal alignment)

1. Use H. AMPLITUDE to align the horizontal amplitude so that the entire test pattern is visible.
2. Use H. SHIFT to align the picture horizontally in the middle.
3. Repeat the H. AMPLITUDE alignment if necessary.

Note: In case the horizontal linearity in wide-screen mode is out of tolerance, add a "DC-shift correction" panel (3104 328 06230) to connector 1419 of the DAF-panel [diagram I]. On the DC-shift panel, cut diode **6433** for correction to the right or diode **6432** for correction to the left.

Caution: Be sure to switch "OFF" the set first. *Never* plug in a not pre-aligned module in a playing set!

EAST/WEST ALIGNMENT

1. Use EAST/WEST PARABOLA to align the vertical lines until straight.
2. Use UPPER EAST/WEST CORNER to align the vertical lines in the upper corners until straight.
3. Use LOWER EAST/WEST CORNER to align the vertical lines in the lower corners until straight.
4. Use EAST/WEST TRAPEZIUM to align for a rectangular.
5. Use HORIZONTAL BOW to correct the E/W parabola such, that it becomes symmetrical.
6. Use HORIZONTAL PARALLELOGRAM to align for straight vertical lines if necessary.

Repeat steps 1 to 6 if necessary.

8.3.6 GEO-4:3 (4:3 geometry alignment in 16:9 sets)

1. Use EAST/WEST PARABOLA to align the vertical lines until straight.
2. Use UPPER EAST/WEST CORNER to align the vertical lines in the upper corners until straight.
3. Use LOWER EAST/WEST CORNER to align the vertical lines in the lower corners until straight.

8.3.7 GEO-SW (Super Wide geometry alignment in 16:9 sets)

You only need to set the following values (if the normal geometry alignment has been performed correctly):

1. V. S-CORRECTION: enter value of the NORMAL GEOMETRY alignment.
2. H. AMPLITUDE: enter value of the NORMAL GEOMETRY alignment subtracted by "1".
3. EAST/WEST PARABOLA: enter value of the NORMAL GEOMETRY alignment.

8.3.8 GEO-100HZ (Digital Scan geometry alignment)

As all alignments are done in Pixel Plus mode (at 75 Hz), the 100 Hz mode needs an extra alignment:

- Select GEO-100HZ. The set automatically switches to 100 Hz mode.
- V. SLOPE: match the middle line of the test pattern with the upper edge of this blanking picture.
- After the alignment, return to the previous menu. The set automatically returns to "Pixel Plus" mode.

8.4 Option Settings

8.4.1 Introduction

The microprocessor communicates with a large number of I2C ICs in the set. To ensure good communication and to make digital diagnosis possible, the microprocessor has to know which ICs to address. The presence / absence of these specific ICs (or functions) is made known by the option codes.

- You can set the "hardware related" options via the SAM - ALIGNMENTS - OPTIONS or OPTION NUMBERS menu.
- You can set the "software related" options via the SAM - DEALER OPTIONS menu.

Notes:

- After changing the option(s), save them with the STORE command.
- The new option setting is only active after the TV is switched "off" and "on" again with the AC power switch (the EAROM is then read again).

8.4.2 DEALER OPTIONS

Select this sub-menu to set the initialisation codes (= options) of the set via text menu's.

Table 8-5 Dealer options overview

Menu name	Subjects	Options	Physically in set
Personal Options	Picture Mute	Yes	Picture mute active in case no picture detected
		No	Noise in case of no picture detected
	Virgin Mode	Yes	TV starts up once with language selection menu after mains switch on for the first time (virgin mode)
		No	TV does not starts up once with language selection menu after mains switch on for the first time (virgin mode)
	Auto Store Mode	None	Autostore mode disabled (not in installation menu)
		PDC-VPS	Autostore mode via ATS (PDC/VPS) enabled
		TXT page	Autostore mode via ACI enabled
		PDC-VPS-TXT	Autostore mode via ACI or ATS enabled
	TXT Preference	TOP	Preference to TOP Teletext
		FLOF	Preference to FLOF Teletext

8.4.3 SERVICE OPTIONS

Select this sub-menu to set the initialisation codes (= options) of the set via text menu's.

Table 8-6 Option overview

Menu-item	Subjects	Options	Description
Dual screen	PIP/Dual Screen	Yes	Feature present.
		No	Feature not present.
	Text/EPG	Yes	Feature present.
		No	Feature not present.
	DS/PIP Tuner	Yes	Only selectable if Dual Screen option is "on"
		No	Feature not present.
Teletext	Flash RAM	Yes	Feature present.
		No	Feature not present.
	NexTView	None	Feature not present.
		Textguide only	Feature present, but only as text guide.
		Nextview 2c3	Feature present, for countries that support this.
Picture Tube	CRT Type	4 by 3	4:3 picture tube.
		16 by 9	16:9 picture tube.
	Picture Rotation	Yes	Frame rotation circuitry present.
		No	Frame rotation circuitry not present .
	CRT size	28 / 32 / 36 29 / 34 / 38	CRT size (in inches).MEC= Panasonic, II= Mark 2
	Anti MoirÈ filter	Yes	Feature present.
		No	Feature not present.
Video repro	Featurebox type	1050i/1250i	HD input
		Eagle 1B	Eagle present (Pixel Plus).
		Eagle 1C	Eagle present (Pixel Plus 2).
	Lightsensor	Yes	Feature present.
		No	Feature not present.
	3D Combfilter	Yes	Feature present.
		No	Feature not present.
	Picture improvement	Yes	LTP (TOPIC) present.
		No	LTP (TOPIC) not present.
	Auto Scavem	Yes	Feature present.
		No	Feature not present.
	Signalling bits	Yes	For 16:9 sets
		No	For 4:3 sets
	Impr. Noise Red.	Yes	Columbus present
		No	Columbus not present
	Pixel Plus version	1	Sets without Columbus but with Eagle (1B)
		2	Sets with Columbus and Eagle (1C)
Source Selection	AV3 2fH	Yes	Not selectable yet
		No	Feature not present.
	AV4 2fH	Yes	Not selectable yet
		No	Feature not present.
	EXT4 1fH	Yes	Not selectable yet
		No	Feature not present.
	EXT3 1fH	Yes	Feature present.
		No	Feature not present.
Audio Repro	Dolby	None	Set without Dolby
		Pro Logic	Set with Dolby ProLogic
		Virtual	Sets with Virtual Dolby
	Rear speakers	Speakerless	Virtual Dolby (without rear speakers)
		Cordless	Wireless active surroundbox present
	Subwoofer present	Yes	Feature present
		No	Feature not present
	Acoustic system	None, FL9-DAS, FL11, FL12, PV02, FL13, Soft Designline, Tech Designline.	Indicates the cabinet styling
	AVL	On	Automatic Volume Limiter 'on'
		Off	Automatic Volume Limiter 'off'
Miscellaneous	Home Cinema	Yes	Set with Home Cinema Link (EU only)
		No	Set without Home Cinema Link
	Integrated RC	Yes	Feature present.
		No	Feature not present.
	Tuner type	UV1316	Set with Philips tuner.
		TEDE9	Set with Alps tuner.
	Integrated Radio	Yes	Feature present.
		No	Feature not present.
	P50 DVD menu line	Yes	Feature present (only in sets with Home Cinema).
		No	Feature not present.
Option no.	Group 1		Group 1 option code overview (see CRT sticker).
	Group 2		Group 2 option code overview (see CRT sticker).

8.4.4 OPT. NO. (Option numbers)

Select this sub menu to set all options at once (expressed in two long strings of numbers).

An option number (or option byte) represents a number of different options. When you change these numbers directly, you can set all options very fast. All options are controlled via eight option numbers.
When the EAROM is replaced, all options will require a re-setting. To be certain that the factory settings are reproduced exactly, you must set both option number lines. You can find the correct option numbers on a CRT sticker inside the TV set.

Example: The CRT sticker in the 28PW9502/12 gives the following option numbers (**Note:** this is just an example):
12660 16672 49984 00000
04118 00001 00032 18250
The first line (group 1) indicates options 1 to 4, the second line (group 2) options 5 to 8 (see tables below).
Every 5-digit number represents 16 bits (so maximum number can be 65536 if all options are set).
When all the correct options are set, the sum of the decimal values of each Option Byte (OB) will give the option number.

9. Circuit Descriptions, Abbreviation List, and IC Data Sheets

Index of this chapter:

9.1 Introduction
9.2 Block Diagram
9.3 Feature Box
9.4 PICNIC
9.5 FEM (Falconic Embedded Memory)
9.6 Eagle
9.7 Abbreviation list
9.8 IC Data Sheets

Note:
- Only **new** circuits, compared to its predecessor the EM5.1E, are described here. For the other circuit descriptions (e.g. the large signal part), see the EM5.1E manual (available under order code 3122 785 13420).
- Figures can deviate slightly from the actual situation, due to different set executions.
- For a good understanding of the following circuit descriptions, please use the diagrams in chapter 6 and 7. Where necessary, you will find a separate drawing for clarification.

9.1 Introduction

This chassis contains, compared to its predecessor, the following new feature/component:
- FEM (Falconic Embedded Memories): is a new Falconic with internal Field memories and jagged line removal.

The chassis consists of a full sized LSP/SSP combination and a smaller double sided four layer SSB, which is mounted on the SSP using a 80-fold SIMM connector. The main functionalities are:
- LSP: supply, deflection, and sound amplification.
- SSP: tuner input, SIMM interface, I/O, and interface provisions for extended functions such as PIP.
- SSB: core TV functionalities, being TXT/control, video and audio decoding, feature box, video featuring, and sync/ geometry control.

The LSP (single sided) is built up very conventional, with hardly any surface mounted components on the copper side. Similar with the EM3 (but different as with the MG-chassis), the EM5 LSP has a very large 'hot' part, including both deflection coils.

The SSB is a high tech module (four layer, 2 sides reflow technology, full SMC) with very high component density and complete shielding for EMC-reasons. Despite this, it is designed in such a way, that repair on component level is possible. To achieve this, attention was paid to:
- The position of service test lands: most of them are at the Tuner side.
- Accessibility (Tuner side). If there are still problems with the accessibility, one can order an extension board (see parts list).
- Clearance around surface mounted ICs (for replacing).
- Detailed diagnostics and fault finding is possible via ComPair.

The availability of Double Window (DW) or Picture In Picture (PIP) depends on the model range. There are two different executions, depending on the number of tuners:
- One Tuner: The TV has only one tuner (on the LSP), so the PIP-picture can be either from this tuner or from an external AV-source.
- Two Tuners: In this case there are two separate tuners, so the main picture and the DW picture are independently selectable. The IF signal from the main tuner is processed on the SSB, while the IF signal from the second tuner is processed by a second BOCMA video processor on the DW-panel. The source selection is done via an I/O expander.

9.2 Block Diagram

For the block diagram see chapter 6 “Wiring Diagram, Block Diagrams, and Overviews”.

The Tuner (item 1200) is a PLL tuner and delivers the IF-signal, via audio & video SAW-filters, to the HIP (High-end Input Processor). The HIP has the following functions:
- IF modulation.
- Video source- and record select.
- Colour decoder.
- Synchronisation.

Attached to the HIP is the 2D Comb filter is used to separate chroma and luminance components out of a CVBS signal.

Three SCART-connectors are available:
- SCART1 is fully equipped,
- SCART2 is meant for VCR. Pin 10 is used for Easylink (P50) and there is a possibility for Y/C in. The CVBS-out on pin 19 is meant for WYSIWYR (What You See Is What You Record).
- SCART3 (if available) is a RGB/CVBS and audio L/R input. It can be used as second tuner input, in case of a 1-Tuner DW/PIP set.

After the HIP, we come to the part that is called the Feature box (diagram B3x):
- For Digital Scan, the PICNIC is required.
- For Natural Motion, the FALCONIC (or FEM) is required.
- For Pixel Plus, the EAGLE is required.

The HIP delivers YUV and sync signals to the PICNIC. This IC takes care of:
- Analogue to Digital conversion and vice versa.
- 50 to 100 Hz conversion.
- Panorama mode.
- Noise reduction.
- Dynamic contrast.

After the PICNIC, the (now 2fH) YUV-signals are fed to the FALCONIC (or FEM) for “Natural Motion” followed by the Eagle for “Pixel Plus” enhancement. The processed YUV signals (from Eagle or PICNIC) are, together with the sync-signals from the PICNIC, then fed to the HOP (High-end Output Processor). This IC handles the video control and geometry part. The RGB-signals for TXT/OSD (from the microprocessor) are also inserted via the HOP. The video part delivers the RGB signals to the CRT-panel and the geometry part delivers the H-drive, V-drive, and a drive-signal for rotation.

Both deflection circuits are “hot” and located on the LSP. They are driven by the HOP. To make a galvanic separation, the Line Drive is driven via transformer 5410 and the Frame Drive via transformer 5621.The horizontal output stage generates some supply voltages and the EHT-, focus- and Vg2-voltages.

The RGB amplifiers on the CRT-panel are supplied with 200 V from the LOT.
The Scavem circuit modulates transitions of the Luminance (Y) signal on the horizontal deflection current, giving a sharper picture.

The sound part is built around the MSP34xx (Multi-channel Sound Processor) for IF sound detection, sound control and source selection. Dolby decoding is also done by the MSP. Amplification is done via a “class D” integrated power amplifier IC, the TDA7490.

The microprocessor, called OTC (OSD, Teletext and Control) takes care of the analogue TXT input- and output processing. The OTC, ROM, and RAM are supplied with 3.3 V, which is derived from the +5V2.
The NVM (Non Volatile Memory) is used to store the settings, one Flash-RAM contains the set software, the other Flash-RAM (7012) is for EPG, and the DRAM is used for storing the Teletext pages.

There is a separate Standby Supply, in order to reduce the Standby power consumption. During Standby, the Main Supply is switched “off” (via TS7529).
A relay (1550) is used to switch the degaussing circuit. It is switched “on” after set start-up and switched “off” by the uP after 12 s.
The Main Supply, an SMPS based on the “down-converter” principle, generates the 141 V (V_BAT) and the +/- 16 V for the audio part.
Note: Voltage V_BAT is not mains isolated (“hot”), but is alignment free.

9.3 Feature Box

The key components of the FBX are the following ICs:
9.4 PICNIC
9.5 FEM (Falconic Embedded Memory)
9.6 Eagle

9.4 PICNIC

All FBX versions have the PICNIC as basic IC. All functions located in the PICNIC are therefore basic functions, and will be described briefly. These functions are completely controlled by the built-in microprocessor.

- **Clamp.** In the PICNIC, three analogue clamp circuits are integrated that assure a well defined DC level for the luminance (Y) and colour-difference (U, V) input signals.
- **AGC.** The AGC in the PICNIC consists of a digital controlled analogue variable gain amplifier with a gain range of 9.3 dB, and an algorithm that uses input derived from histogram data and the overflow detection. It is designed to assure an optimal ADC input range, for all input signals, and so having minimal quantisation noise.
- **Analogue pre and post filters.** The pre filters of the Feature Box are always the integrated filters of the PICNIC. The internal post filters of the PICNIC are never used.
- **ADC/DAC.** Analogue to Digital conversion is done with three identical 9-bit ADCs, and the Digital to Analogue conversion uses three identical 10-bit DACs. The Y signal is mapped on 9 bits for black-to-white range and has room for over- and undershoots by means of the 10th bit at the output DACs. The U and V channels are processed in 9-bit accuracy up to the CTI circuit that has a gain of 2, resulting in a 10-bit output that suits the 10 bit DACs.
- **Time Base Correction.** The Time Base Correction circuit simulates a fast acquisition line locked clock, while the actual system clock is locked to the input line frequency with a very large time constant. In this way the typical VCR problems linked to a one clock Feature Box can be solved, particularly the deflection circuit (in case of CRT) driven by the Feature Box can profit from this feature.
- **VCR detection.** The VCR detection of the PICNIC is an algorithm that detects the phase jumps (which occurs for instance with VCRs) to be able to correct the picture deviations. This detection is done by monitoring the PLL circuit in the PICNIC by the on-board microprocessor on several parameters.
- **Peaking.** The two dimensional peaking can boost or attenuate higher frequencies in both vertical and horizontal direction. The lowest setting is a 2D low pass. The higher settings make sharpening, but the resulting overshoots can clip relatively fast compared to the dynamic peaking, because there is no room for overshoot above white and under black. This peaking is done on field base.
- **Digital Noise Reduction (DNR).** The PICNIC accommodates three noise reduction circuits:
  - **Clinic.** This "clamp noise reduction" circuit consists of an adaptive temporal field recursive filter. It corrects the DC level of each line, when it is varying from field to field in the line segments with likely the least movement. It can be used to correct clamp errors that cannot be restored by conventional clamp circuits. The filter is completely autonomous for the user, who can only switch it “on” or “off”.
  - **Limeric.** This spatial noise reduction circuit is targeted for reduction of the mid frequency noise spectrum, where adaptive filtering combines pixels around the centre pixel and pixels from the lines above in a recursive way. The quantity of noise reduction is user defined.
  - **2D Coring.** This circuit attacks spatial noise in a very drastic way without distinguishing noise from wanted resolution. It shaves away small details of any kind, depending on the amplitude of the detail and the user setting. So, it is advised to use this feature only at the lowest settings.
- **Histogram Modification.** Using histogram modification techniques in PICNIC, the contrast of the overall picture may be improved. From a TV scene, the distribution of all luminance values is taken (histogram). This histogram is used to calculate an optimal transfer curve for the particular scene, which is used to process the video digitally resulting in a picture with improved contrast (called “Dynamic Contrast”).
- **Auto Picture Control.** The PICNIC is prepared to make several APC functions in co-operation with the main software. This is made by giving relevant video quality data to main, and by giving several control ‘handles’ to main microprocessor. In this way, automatic picture quality settings depending on customer settings and video data can be made. The following items are prepared in the AutoTV:
  - **Automatic Picture Control.** This feature controls the settings for DNR, Limeric, coring, sharpness and histogram modification as a function of the noise figure and signal steepness information extracted from the PICNIC and from external information such as ambient light.
  - **Automatic Aspect Ratio Adaptation.** This AARA feature uses data from the black bar detection circuit to adapt vertical and horizontal amplitude to an aspect ratio belonging to the display and does not show black bars. This is done by the control software. Auto Format is controlled via main software by reading out the black bar information from the FBX.
- **Field Rate Upconversion.** In order to remove large area flicker from the TV screen, the field-rate of the video is doubled by the Feature Box. A 50/60 Hz video input is converted to 100/120 Hz. The line frequency (16 kHz) is also doubled (32 kHz). When the video input contains fields A, B etc..., the conversion provides an AABB sequence scanning on the display. The actual up-conversion is done in the first Field Memory (FM1) by reading it twice at double speed, while writing once.
- **Input Phase.** The horizontal phase of the input video acquisition can be shifted to allow compensation for processing delay of other components in front of the Feature Box.
- **Miscellaneous Features.** To be sure that On Screen Display (OSD) is always readable, even when no video signal is received, the feature box can be switched to stable OSD mode. Free running but stable horizontal and vertical deflection drive signals will be generated, so that OSD information and PIP can be displayed jitter free, and thus clearly readable on the screen. Specially for tuning purposes and smooth channel switching a stable OSD mode is implemented that uses the horizontal time base

correction combined with a slow PLL, and a small vertical catch window. This mode enables undisturbed reading of OSD while the set is tuning.

9.5 FEM (Falconic Embedded Memory)

The FEM IC (SAA4998) is the successor of the SAA4993H, and adds ”jagged line removal” and “embedded field memories” as new/improved features.

9.5.1 Motion Estimation/Compensation

The FEM utilizes a high quality motion estimator. The motion estimation is applied to eliminate the motion blur of current 100 Hz TV sets and to eliminate the motion judder of movies. This judder is visible on all television sets and even in a cinema. Particularly for movies (with only 25 pictures/second), the increased number of pictures helps to smoothen the motion. These improvements a.o. lead to a picture performance improvement on a global scale, with an optimal quality independent from the received standard (50/60 Hz and/or video/film) or display mode (field doubling/de-interlaced 1fV). Especially film judder removal from a 60 Hz input source, the so-called 3-2 pull down film mode, makes the FEM globally applicable.

9.5.2 4:2:2 processing

The colour data path in the FEM is implemented in 4:2:2 bandwidth (as in PICNIC). The 4:2:2 mode requires an Field Memory (FM1) of 16 bits wide.

9.5.3 Upconversion

The FEM is always used in combination with the Eagle. Therefore, the output is always adapted to the input of the Eagle. This 2fV/4fH signal is motion compensated. Only 3 out of 4 fields are correct motion compensated. The Eagle will only use these three correct motion compensated fields.

9.5.4 Dynamic Noise Reduction

For signals that have been affected by noise, improvement can be achieved by combining of the pixel values of the current and past fields of video. This is however only possible for those picture areas in which no movement occurs. If movement occurs in some area, only the information from the current field of video may be displayed for that area to prevent smearing, so noise reduction is not effective there.
To reduce loss of detail, the high frequencies can be bypassed. This can be done because the human eye is more sensitive to noise with low frequencies. The movement detection is implemented in the luminance channel and in the colour channel to reduce artefacts such as smearing.

9.5.5 Vertical Peaking

The vertical peaking circuit in FEM works on de-interlaced data, resulting in a double resolution (compared to PICNIC) high vertical frequency enhancement.

9.5.6 EDDI

EDDI is an Edge Dependent De-Interlacer. This improved de-interlacer, results in smaller jagged lines for video input sources (not for film sources!).

9.5.7 Strobe

Having a FEM in the data path, it is easy to create a still picture or freeze feature. A frame can be frozen once, or, using the strobe feature, repetitively after a certain programmable interval of time. The Eagle is used to make “still pictures”.

9.6 Eagle

The Eagle has the following features:

- **Vertical upscaler.** Two fully programmable vertical upscalers are implemented in the Eagle chip, one for the luminance signal, and one for the colour difference signals. However, the number of output lines is never allowed to exceed 1024 lines per field including blanking. This means that 1050i/1250i is still possible.
- **Vertical Zoom.** The vertical zooming is done with the vertical upscaler of the Eagle instead of using the FEM upscaling. Zoom factors varying from 1 to 8 can be selected. Vertical compression is possible in 1fV up to a factor of 2.
- **Interlacer and horizontal upscaler.** Two fully programmable horizontal upscalers are implemented in the Eagle chip, one for the luminance signal, and one for the colour difference signals.
- **Continuous horizontal zoom/compression.** The horizontal zooming is done with the interlacer and horizontal upscaler of the Eagle instead of the PICNIC upscaling. In the Eagle, a digital sample rate converter can provide horizontal video compression up to 50 %, and up to 8 times zoom. In compress mode, a part of the screen remains unused. In this case, parts of the display can be filled in with a grey value, a colour, or other signal source that bypasses the Feature Box (TXT or another compressed picture).
- **Panorama.** A panoramic horizontal distortion on the picture can be applied to make a screen-fitting picture, without having black side panels, or lost video. This is mainly used to fit 4:3 pictures in a 16:9 display with a resulting correct aspect ratio in the middle of the screen and stretched video at the left and right sides. The inverse feature is called “amaronap” and can also be applied.
- Sub pixel **Luminance Transient Improvement** (LTI): The Eagle contains a horizontal and a vertical sub pixel LTI.
- **Peaking**: In the Eagle both horizontal and vertical luminance peaking is implemented. The horizontal peaking equals the peaking of the PICNIC. The vertical peaking is an addition of two fixed and one 9-taps fully programmable peaking filters.
  - Horizontal luminance peaking: Peaking in Eagle can be used in two ways:
    a. The first way is to give the luminance a linear boost of the higher frequency ranges, which makes no distinction between small and large details or edges.
    b. The other way is to use the peaking dynamically, in order to boost smaller details and provide less gain on large details and edges. The effect is detail enhancement without creation of unnatural large over- and undershoots on large details and edges.
  - Vertical luminance peaking: There are three vertical peaking filters. Two fixed vertical peaking filter and one fully programmable vertical peaking filter. The three filters all have their separate gain setting before the results are added. To avoid excessive gain settings a high peak suppression can be set to avoid excessive output results.
- **Colour dependent sharpness** (CDS): The colour dependent sharpness circuit increases the luminance sharpness in saturated red and magenta parts. The reduction of the normal peaking can be switched “on/off”.

The below given colour features are implemented in all Eagle chips:

- **Digital Colour Transient Improvement** (DCTI): DCTI equals the PICNIC DCTI implementation with improved control range. The DCTI is done with Eagle i.s.o. PICNIC.

- **Skin tone correction**: The idea of Skin tone correction is to correct UV components corresponding to skin towards an “ideal” skin tone axis.
- **Blue Stretch**: This feature makes it possible to shift colours near white towards more bluish coloured white.
- **Green Enhancement**: This feature makes it possible to shift low saturated green colours towards more saturated green colours.
- **Colour Dependent Peaking** (CDP): When using luminance peaking, the viewer has the impression that the colour performance is somewhat lower then in the picture generated without the luminance peaking circuit. This impression is normal because no action was done in the colour channel to compensate for the change in the luminance channel. Locally, at the edge position the contrast has been increased without increase of the saturation at this point. That is why the viewer perceives less colour. To give the viewer the same colour impression as on the original picture, a correction to the colour has to be done at the same place where a change was made in the luminance. This is CDP.
- **Skin Tone Dependent Peaking** (STDP): The horizontal and vertical peaking can be reduced in skin tone areas to avoid that people become too old. Attenuation can be applied to both horizontal and vertical peaking.

9.7 Abbreviation list

2DNR	Spatial (2D) Noise Reduction
3DNR	Temporal (3D) Noise Reduction
AARA	Automatic Aspect Ratio Adaptation: algorithm that adapts aspect ratio to remove horizontal black bars; keeping up the original aspect ratio
ACI	Automatic Channel Installation: algorithm that installs TV sets directly from cable network by means of a predefined TXT page
ADC	Analogue to Digital Converter
AFC	Automatic Frequency Control: control signal used to tune to the correct frequency
AGC	Automatic Gain Control: algorithm that controls the video input of the feature-box
AM	Amplitude Modulation
ANR	Automatic Noise Reduction: one of the algorithms of Auto TV
AR	Aspect Ratio: 4 by 3 or 16 by 9
Artistic	See OTC 2.5: main processor
ASF	Auto Screen Fit: algorithm that adapts aspect ratio to remove horizontal black bars but without throwing away video information
ATV	See Auto TV
AUDIO_C	Audio Centre
AUDIO_L	Audio Left
AUDIO_R	Audio Right
AUDIO_SL	Audio Surround Left
AUDIO-SR	Audio surround right
AUDIO_SW	Audio Subwoofer
Auto TV	A hardware and software control system that measures picture content, and adapts image parameters in a dynamic way
BC-PROT	Protection signal to the uP for a too high Beam Current.
BG	System B and G
BLC-INFO	Black Current Info
B-SC1-IN	Blue SCART1 in
B-SC2-IN	Blue SCART2 in
B-TXT	Blue teletext
BOCMA	BiMOS One Chip Mid-end Architecture: integrated video and chroma decoder
CL	Constant Level: audio output to connect with an external amplifier
ComPair	Computer aided rePair
CRT	Cathode Ray Tube or picture tube
CSM	Customer Service Mode
CTI	Colour Transient Improvement: manipulates steepness of chroma transients
CVBS	Composite Video Blanking and Synchronisation
CVBS-TER	CVBS terrestrial
DAC	Digital to Analogue Converter
DBE	Dynamic Bass Enhancement: extra low frequency amplification
DC-filament	Filament supply voltage
DFU	Direction For Use: description for the end user
DNR	Digital Noise Reduction: noise reduction feature of the box
DPL	Dolby ProLogic
DSP	Digital Signal Processing
DST	Dealer Service Tool: special remote control designed for dealers to enter e.g. service mode
DVD	Digital Versatile Disc
DYN-FASE-COR	Dynamic phase correction, to correct the phase of the H-drive
Eagle	Feature box IC performing peaking, zooming and sub pixel LTI in both horizontal and vertical direction, CTI and other colour features
EHT	Extra High Tension
EHT-INFO	Extra High Tension information, used for contrast reduction, vertical and horizontal amplitude correction, beam current protection, and flash detection.
EPG	Electronic Program Guide: system used by broadcasters to transmit TV guide information (= NexTView)
EW	East West, related to horizontal deflection of the set
EW-DRIVE	The drive signal for the EW-transistor
EXT	External (source), entering the set via SCART or via cinches
FALCONIC	SAA4992H, Feature Box IC performing Digital Natural Motion, 3DNR, and vertical zoom and vertical peaking
FBL	Fast Blanking: DC signal accompanying RGB signals
FBL-PIP	The fast blanking signal for PIP
FBL-TXT	The fast blanking signal for TXT. It has a higher priority than FBL-PIP
FBSCO	Fixed Beam Current Switch Off, a 140 V dip detection to activate the black switch off circuit
FBX	Feature Box: part of small signal / separate module which contains 100 Hz processing, extra featuring and AutoTV algorithms (FBX6= based on PICNIC, FBX7= based on PICNIC and Eagle)
FDS	Full Dual Screen
FILAMENT	Filament of CRT
FLASH	Flash memory
FM	Field Memory or Frequency Modulation
G-TXT	Green teletext
GND-DRIVE	A separate ground for the line drive towards the line driver
HA50	Horizontal Acquisition 1fh: horizontal sync pulse coming out of the HIP
HD100	Horizontal Drive 2fh: horizontal sync pulse coming out of the feature-box
HD at HOME	A signal from the OTC, to switch the HOP to the Pixel Plus standard (75 Hz frame)
HFB	Horizontal Flyback Pulse: horizontal sync pulse from large signal deflection
HIP	High-end video Input Processor (TDA9320): video and chroma decoder of EM5E
HOP	High-end video Output Processor (TDA9330): video, sync, and geometry controller of EM5E
HP	Headphone
Interlaced	Scan mode where two fields are used to form one frame. Each field contains half the number of the total amount of lines. The fields are written in 'pairs', causing line flicker
Last Status	The settings last chosen by the customer, read, and stored in RAM or in the NVM. They are called at start-up of the set to configure it according the customers wishes
LDP	Line Deflection Protection signal, derived from the EW-current and voltage
LED	Light Emitting Diode

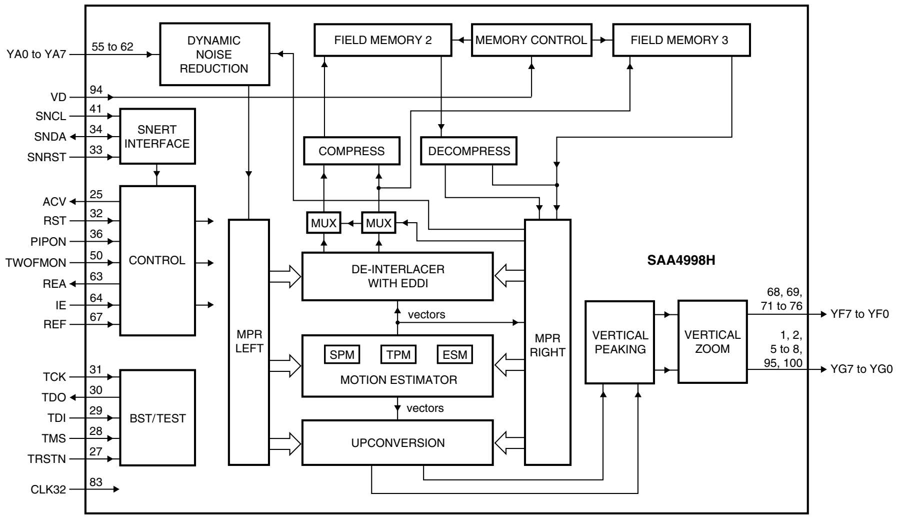
LINE DRIVE	Line drive signal (for the Line transistor)
LNA	Low Noise Adapter
LORE	LOcal REgression based noise reduction
LSP	Large signal panel
MSP	Multi-standard Sound Processor: ITT sound decoder of EM5E
MUTE	Mute-Line
NC	Not Connected
NVM	Non Volatile Memory: IC containing TV related data e.g. alignments
O/C	Open Circuit
ON/OFF LED	On/Off control signal for the LED
OSD	On Screen Display
OTC	On screen display Teletext and Control; also named Artistic (SAA5800)
P50	Project 50 communication: protocol between TV and peripherals
PCB	Printed Circuit Board
PICNIC	Peripheral Integrated Combined Network IC (SAA4978): main IC for 100 Hz featuring and feature processing
PIP	Picture In Picture
Progressive Scan	Scan mode where all scan lines are displayed in one frame at the same time, creating a double vertical resolution.
PTP	Picture Tube Panel
RAM	Random Access Memory
R-TXT	Red teletext
RC	Remote Control
RC5 / RC6	Signal protocol from the remote control receiver
RESET	Reset signal
RGB-PIP	RGB-input for PIP
RGB-TXT	RGB-input for Teletext and OSD
RGB-VC	RGB-input to the Picture Tube Panel
ROM	Read Only Memory
SAM	Service Alignment Mode
SC	Sandcastle: two-level pulse derived from sync signals
S/C	Short Circuit
SCAVEM	Scan Velocity Modulation
SCL-F	Clock signal on fast I2C bus
SD	Standard Definition
SDA-F	Data signal on fast I2C bus
SIF	Sound Intermediate Frequency
SIMM	80-fold connector between LSP and SSB
SNERT	Synchronous No parity Eight bit Reception and Transmit
SSB	Small Signal Board
STBY	Standby
SW	Subwoofer
SWAN	Spatial Weighted Averaging Noise reduction
TXT	Teletext
TXT-DS	Teletext Dual Screen
TXT-KILL	To kill the TXT picture to insert a PIP. It has a higher priority than FBL-TXT.
uP	Microprocessor
U100	U from Feature Box
V100	V from Feature Box
VA50	Vertical Acquisition 1Fh
VBAT	Main supply for deflection (mostly 141 V)
VD100	Vertical Drive 2fh: vertical sync pulse from deflection
VDPOS	One of the symmetrical drive signals for the DC frame output stage.
VDNEG	One of the symmetrical drive signals for the DC frame output stage.
VDS	Virtual Dolby Surround
VFB	Vertical Flyback Pulse: vertical sync pulse coming from the Feature Box
VL	Variable Level out: processed audio output towards external amplifier
WYSIWYR	What You See Is What You Record: record selection that follows main picture and sound
X-RAY-PROT	A protection signal for too high X-ray radiation
XTAL	Quartz crystal
Y100	Y from Feature Box
Y-OUT	Luminance-signal to HOP IC
YUV-Feat	The YUV input for the main picture, coming from the Feature box or the HIP

9.8 IC Data Sheets

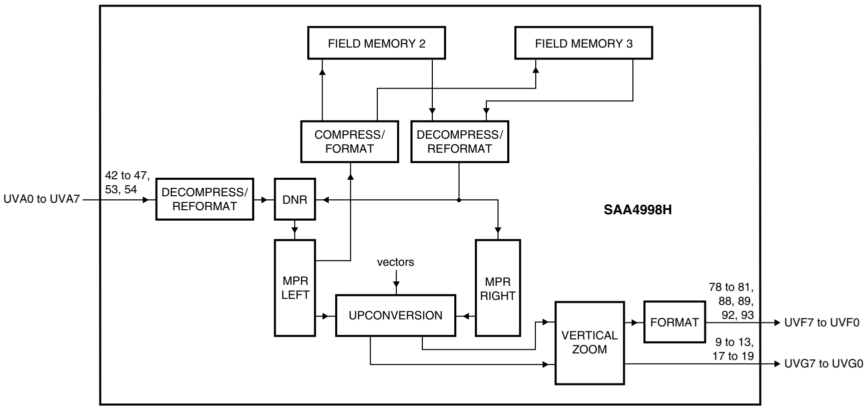
In this paragraph, the internal block diagrams and pinning are given of ICs that are drawn as a 'black box' in the electrical diagrams (with the exception of 'memory' and 'logic' ICs).

9.8.1 Diagram B3B, SAA4998 (IC7760)

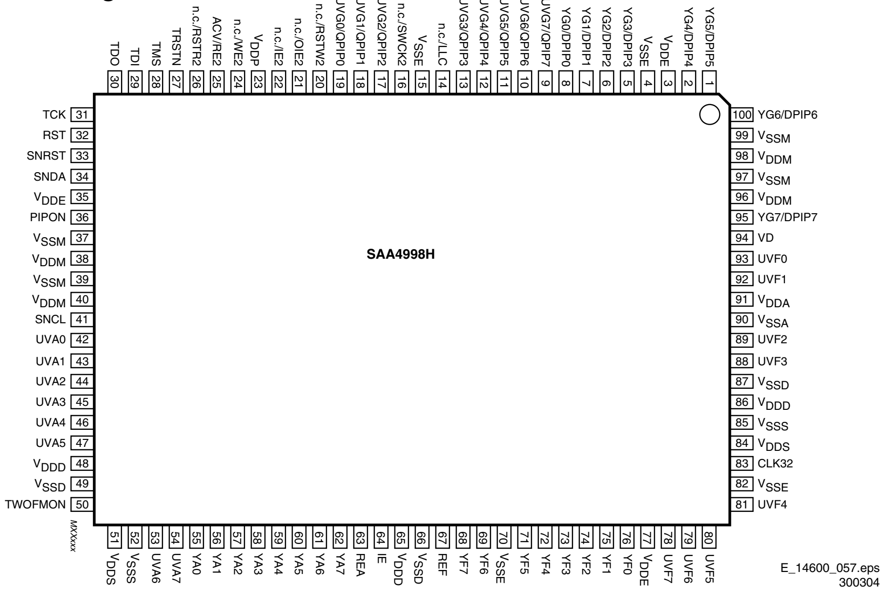
Block diagram of the luminance part in full FALCONIC mode.


YA0 to YA7
55 to 62
DYNAMIC NOISE REDUCTION
FIELD MEMORY 2
MEMORY CONTROL
FIELD MEMORY 3
VD 94
SNCL 41
SNDA 34
SNRST 33
SNERT INTERFACE
COMPRESS
DECOMPRESS
ACV 25
RST 32
PIPON 36
TWOFMON 50
REA 63
IE 64
REF 67
CONTROL
MUX
MUX
MPR LEFT
DE-INTERLACER WITH EDDI
vectors
SPM
TPM
ESM
MOTION ESTIMATOR
vectors
UPCONVERSION
MPR RIGHT
SAA4998H
VERTICAL PEAKING
VERTICAL ZOOM
68, 69, 71 to 76
YF7 to YF0
1, 2, 5 to 8, 95, 100
YG7 to YG0
TCK 31
TDO 30
TDI 29
TMS 28
TRSTN 27
BST/TEST
CLK32 83

Block diagram of the chrominance part in full FALCONIC mode.


FIELD MEMORY 2
FIELD MEMORY 3
COMPRESS/ FORMAT
DECOMPRESS/ REFORMAT
UVA0 to UVA7
42 to 47, 53, 54
DECOMPRESS/ REFORMAT
DNR
SAA4998H
vectors
MPR LEFT
MPR RIGHT
UPCONVERSION
VERTICAL ZOOM
FORMAT
78 to 81, 88, 89, 92, 93
UVF7 to UVF0
9 to 13, 17 to 19
UVG7 to UVG0

Pin configuration


SAA4998H
1 YG5/DPIP5
2 YG4/DPIP4
3 VDDE
4 VSSE
5 YG3/DPIP3
6 YG2/DPIP2
7 YG1/DPIP1
8 YG0/DPIP0
9 UVG7/QPIP7
10 UVG6/QPIP6
11 UVG5/QPIP5
12 UVG4/QPIP4
13 UVG3/QPIP3
14 n.c./LLC
15 VSSE
16 n.c./SWCK2
17 UVG2/QPIP2
18 UVG1/QPIP1
19 UVG0/QPIP0
20 n.c./RSTW2
21 n.c./OIE2
22 n.c./IE2
23 VDDP
24 n.c./WE2
25 ACV/RE2
26 n.c./RSTR2
27 TRSTN
28 TMS
29 TDI
30 TDO
31 TCK
32 RST
33 SNRST
34 SNDA
35 VDDE
36 PIPON
37 VSSM
38 VDDM
39 VSSM
40 VDDM
41 SNCL
42 UVA0
43 UVA1
44 UVA2
45 UVA3
46 UVA4
47 UVA5
48 VDDD
49 VSSD
50 TWOFMON
51 VDDS
52 VSSS
53 UVA6
54 UVA7
55 YA0
56 YA1
57 YA2
58 YA3
59 YA4
60 YA5
61 YA6
62 YA7
63 REA
64 IE
65 VDDD
66 VSSD
67 REF
68 YF7
69 YF6
70 VSSE
71 YF5
72 YF4
73 YF3
74 YF2
75 YF1
76 YF0
77 VDDE
78 UVF7
79 UVF6
80 UVF5
81 UVF4
82 VSSE
83 CLK32
84 VDDS
85 VSSS
86 VDDD
87 VSSD
88 UVF3
89 UVF2
90 VSSA
91 VDDA
92 UVF1
93 UVF0
94 VD
95 YG7/DPIP7
96 VDDM
97 VSSM
98 VDDM
99 VSSM
100 YG6/DPIP6
MXXxxx

E_14600_057.eps
300304

Figure 9-1 Internal Block Diagram and Pin Configuration

10. Spare Parts List

Set Level

Various

0010	3104 308 10801	Back cover assy
0020	3104 304 25722	Bracket Deg.coil
0021	3104 304 25712	Corner bracket deg.coil
0024	4822 404 31341	Coil clamp
0038	3104 304 24911	SSB bracket top
0044	3139 124 40421	Screw A02-32WSEF
0070	4822 402 11183	Mains cord holder
0290▲	3111 254 23481	Coil & clamp
1099▲	9301 899 90301	CRT W66ERF042X044
1099▲	9301 924 90314	CRT W76ERF062X044
1099▲	9301 965 70314	CRT A68ERF142X044/M
1116	3104 328 30551	Side I/O assy
1180	3104 328 12141	DC-shift assy
8190▲	4622 007 51622	Mainscord UK
8190	4622 009 50531	Mains cord EU 2m
8190▲	4822 321 11425	Mains cord EU

—∿—

5203▲	2422 549 44244	Degausing coil 47858 32"
5203▲	2422 549 44621	Degausing coil 28"
5203	3104 308 20381	Degausing coil 10019 29"
5205	3104 308 20961	Coil canceller
5205	3128 138 60661	Coil canceller

Set Level

Various

0018▲	4822 404 31363	Mains cord relief
0018▲	4822 466 11453	Mains cord block
0061▲	4822 321 11139	Mainscord EU 2m
0061▲	4822 321 11499	Mains cord EU 2m

Large Signal Panel [A]

Various

0011	3104 308 78231	Transistor cooling clip
0020	4822 492 70789	Fix transistor
0030	3104 304 23001	LSP chassisframe
0037	3104 304 24891	LOT bracket
0050	3104 304 90361	Insulating plate
0050	4822 466 93461	Insulating plate 20 X 25
0065	3104 304 22031	LOT spacer
0066	3104 304 23051	Conn. support EMGS
0067	3104 304 23061	Conn. part EMGS
0072	3104 304 24901	SSB bracket bot.
0080	4822 492 70789	Fix transistor
0086	4822 256 91879	Plastic holder
0124	3104 300 40441	PT screw K40 X 30
0125	3104 304 90361	Insulating plate
0250	3104 308 78181	Cable clamp twist lock
0262	3104 304 10722	Cable clamp
0264	3104 304 10661	Cable clamp
0265	3104 304 10661	Cable clamp
0320	4822 255 41371	Transistor clamp
0341	4822 492 63524	Transistor clamp
0395	4822 492 70789	Fix transistor
0396	4822 492 70789	Fix transistor
0505	4822 492 62076	Transistor clamp
1200	3139 147 19341	Tuner UV1318S/A I-3
1200	3139 147 19361	Tuner UV1318S/A I U-3
1205	2422 025 17242	Connector 80p f SIMM
1417	4822 265 20723	Connector 2p
1424	2422 025 11244	Connector 7p m
1491	4822 267 10973	Connector 1p
1498	2422 025 04849	Connector 2p m
1499	2422 025 04849	Connector 2p m
1501▲	4822 070 35002	Fuse 5A
1502	4822 267 10774	Connector 2p male (red)
1503▲	4822 070 12502	Fuse 2.5A
1505▲	2422 025 16374	Connector 2p m
1511	4822 265 11253	Fuse holder
1512	4822 265 11253	Fuse holder
1520	3104 301 24181	Spring for Bracket
1521	3104 301 24181	Spring for Bracket
1522	4822 255 41371	Transistor clamp
1550▲	2422 132 07411	Relay 1p 5V 5A
1590	4822 252 60151	Surge protect
1601▲	2422 086 10919	Fuse 65V 125mA
1620	4822 267 10735	Connector 3p
1625	2422 025 16382	Connector 3p m
1735	4822 267 10565	Connector 4p
1901	4822 267 10771	Socket 2 x SCART
1902	4822 267 10982	Connector 2p
1936▲	2422 025 12485	Connector 11p m
1940▲	2422 025 12485	Connector 11p m
1943	4822 267 10748	Connector 3p
1945	4822 267 10735	Connector 3p
1946▲	4822 265 41391	Connector 9p
1955	4822 267 10735	Connector 3p
8000▲	3104 311 03272	Cable 640mm EHT
8193▲	4822 320 20216	Cable focus 364 mm
8194▲	4822 320 20189	Cable 440mm HT-focus
8417▲	3104 311 04561	Cable 2P3/400/2P3
8424▲	3104 311 02991	Cable 7p/560/7p Wh
8498▲	3104 311 04531	Cable 2P/400/2P
8625▲	3104 311 03101	Cable 3p/560/3p Bk
8625▲	3104 311 03331	Cable 2p/560/2p3 Bk
8936	3104 311 05271	Cable 11p/820/11p
8940	3104 311 06611	Cable 11p/480/11p ferr.

⊣⊢

2100▲	2252 811 95021	1nF 10% 250V
2100	4822 126 13841	1nF 20% 250V
2101	4822 121 51598	2.2nF 5% 400V
2102	4822 124 40248	10µF 20% 63V
2103	2020 552 94427	100pF 5% 50V
2104	4822 123 14025	2200µF 20% 16V
2105	2020 552 94427	100pF 5% 50V
2106	4822 126 13751	47nF 10% 63V
2107	4822 121 43855	3.3nF 5% 400V
2108	4822 121 70162	10nF 5% 400V
2109	4822 126 14472	1µF 10% 10V 0805
2110	4822 126 14472	1µF 10% 10V 0805
2111	4822 121 43526	47nF 5% 250V
2112	5322 126 11583	10nF 10% 50V 0603
2114▲	2222 338 22104	100nF 20% 275V
2115	4822 124 40764	22µF 100V
2116	4822 126 13682	100pF 5% 1kV
2117	2020 558 90556	680pF 10% 1kV
2118	4822 124 80061	1000µF 20% 25V
2119	4822 123 14025	2200µF 20% 16V
2120	4822 126 11524	1.5nF 10% 1kV
2126	4822 123 14025	2200µF 20% 16V
2130	5322 126 11583	10nF 10% 50V 0603
2131	4822 126 13881	470pF 5% 50V
2140	4822 124 40248	10µF 20% 63V
2141	4822 124 40248	10µF 20% 63V
2144	4822 126 14472	1µF 10% 10V 0805
2145	4822 126 13881	470pF 5% 50V
2147	3198 017 31530	15nF 20% 50V 0603
2148	4822 126 10206	2.2nF 10% 500V
2149	4822 126 14472	1µF 10% 10V 0805
2150	5322 126 11583	10nF 10% 50V 0603
2152	4822 121 70162	10nF 5% 400V
2154	3198 017 33330	33nF 20% 16V 0603
2154	4822 126 14549	33nF 16V 0603
2200	4822 124 40248	10µF 20% 63V
2201	4822 126 13879	220nF +80-20% 16V
2202	4822 126 13473	220nF +80%/-20% 50V
2203	4822 124 80195	470µF 20% 10V
2400	2020 021 91445	47µF 20% 200V
2401	4822 121 42077	6.8nF 10% 400V
2402	2020 012 93596	22µF 20% 250V
2402	2020 012 93771	33µF 20% 250V
2402	4822 124 12373	47µF 20% 250V
2403	2238 916 15641	22nF 10% 25V 0603
2404	2238 916 15641	22nF 10% 25V 0603
2412	3198 024 44730	47nF 50V 0603
2413	4822 124 12255	10µF 20% 50V
2414	3198 024 44730	47nF 50V 0603
2415	4822 126 13883	220pF 5% 50V
2417	4822 126 14076	220nF +80/-20% 25V
2419	4822 126 14237	470pF 10% 2kV
2420	4822 121 70581	1.5nF 5% 2kV
2420	4822 121 70595	1.2nF 5% 2kV
2421	2022 333 00091	680nF 10% 250V
2421	2038 301 00312	1.2µF 5% 250V
2425	4822 121 10526	9.1nF 5% 2kV
2425	4822 121 70435	10nF 5% 2kV
2426	2222 375 90345	20nF 5% 630V
2426	4822 121 10653	22nF 5% 630V
2426	4822 121 10658	24nF 5% 630V
2430	4822 126 10206	2.2nF 10% 500V
2431	4822 126 10206	2.2nF 10% 500V
2433	2022 333 00163	360nF 5% 250V
2433	4822 121 10518	390nF 5% 250V
2433	4822 121 42634	560nF 5% 250V
2440	2022 552 05679	1µF 10% 16V 0805
2443	9965 000 09661	470pF 50V 10%
2448	5322 122 32268	470pF 5% 50V 0805 NP0
2450	5322 121 42578	100nF 5% 250V
2451	2020 012 93757	1000µF 20% 10V
2454	3198 017 31530	15nF 20% 50V 0603
2455	5322 126 11578	1nF 10% 50V 0603
2457	2020 552 96804	15nF 10% 50V 0805
2458	4822 126 14241	330pF 0603 50V
2460	4822 124 81144	1000µF 16V
2462	4822 124 80061	1000µF 20% 25V
2463	4822 122 31177	470pF 10% 500V
2464	4822 124 80061	1000µF 20% 25V
2465	4822 122 31177	470pF 10% 500V
2466	2238 586 59812	100nF 20% 50V 0603
2468	4822 122 31177	470pF 10% 500V
2480	5322 126 11582	6.8nF 10% 63V
2482	3198 017 34730	47nF 16V 0603
2483	4822 126 14238	2.2nF 50V 0603
2483	5322 126 11579	3.3nF 10% 63V
2490	9965 000 14169	100µF 10V 20%
2491	4822 124 81151	22µF 50V
2492	9965 000 14169	100µF 10V 20%
2494	2020 552 96326	220nF 10% 16V
2494	2238 780 15654	220nF 10% 16V 0805
2495	2020 552 96326	220nF 10% 16V
2495	2238 780 15654	220nF 10% 16V 0805
2497	4822 126 12105	33nF 5% 50V 0805
2499	5322 126 11579	3.3nF 10% 63V
2501	4822 126 13449	1nF 10% 2kV
2503	5322 121 42489	33nF 5% 250V
2504	2238 916 15641	22nF 10% 25V 0603
2505▲	2020 554 90173	2.2nF 20% 250V
2506	5322 121 42386	100nF 5% 63V
2507▲	2222 338 22474	470nF 20% 275V
2508▲	2222 338 23223	22nF 20% 275V
2509▲	2222 338 23223	22nF 20% 275V
2510	4822 126 13449	1nF 10% 2kV
2511	4822 124 12417	2200µF 20% 25V
2512	4822 124 12417	2200µF 20% 25V
2513	4822 126 13881	470pF 5% 50V
2514	4822 126 14238	2.2nF 50V 0603
2515	4822 124 80096	47µF 200V
2516	2020 024 90743	220µF 20% 400V
2517	4822 121 70162	10nF 5% 400V
2518	4822 122 31211	100pF 10% 500V
2519	4822 126 10206	2.2nF 10% 500V
2520▲	2222 338 22104	100nF 20% 275V
2522	4822 126 10206	2.2nF 10% 500V
2525	4822 126 14247	1.5nF 50V 0603
2528	4822 126 14472	1µF 10% 10V 0805
2530	4822 126 14472	1µF 10% 10V 0805
2531	4822 122 31177	470pF 10% 500V
2535	4822 126 13193	4.7nF 10% 63V
2537▲	2222 338 23223	22nF 20% 275V
2538	4822 122 33177	10nF 20% 50V
2540	4822 124 40248	10µF 20% 63V
2541	4822 122 31211	100pF 10% 500V
2542	4822 124 80061	1000µF 20% 25V
2543	4822 124 80061	1000µF 20% 25V
2544	4822 126 14238	2.2nF 50V 0603
2601	2238 586 59812	100nF 20% 50V 0603
2603	4822 126 13883	220pF 5% 50V
2604	4822 126 13473	220nF +80%/-20% 50V
2605	4822 126 13883	220pF 5% 50V
2620	4822 126 13473	220nF +80%/-20% 50V
2621	2238 586 59812	100nF 20% 50V 0603
2622	4822 124 40255	100µF 20% 63V
2623	4822 126 14238	2.2nF 50V 0603
2624	4822 121 51319	1µF 10% 63V
2625	4822 121 51319	1µF 10% 63V
2627	5322 124 40641	10µF 20% 100V
2628	4822 124 40255	100µF 20% 63V
2630	4822 126 14491	2.2µF 10V 0805
2631	4822 126 14491	2.2µF 10V 0805
2633	5322 126 11579	3.3nF 10% 63V
2635	2238 586 59812	100nF 20% 50V 0603
2642	4822 124 40255	100µF 20% 63V
2653	2238 586 15628	2.7nF 10% 50V 0603
2653	5322 126 11579	3.3nF 10% 63V
2656	2238 916 15641	22nF 10% 25V 0603
2657	2238 916 15641	22nF 10% 25V 0603
2659	2238 916 15641	22nF 10% 25V 0603
2660	5322 126 11578	1nF 10% 50V 0603
2702	3198 016 31020	1nF 25V 0603
2704	3198 016 31020	1nF 25V 0603
2705	4822 126 13482	470nF +80%/-20% 16V
2706	4822 126 14585	100nF 10% 0805 50V

2707	4822 126 14076	220nF +80/-20% 25V
2708	4822 126 14076	220nF +80/-20% 25V
2709	4822 126 13881	470pF 5% 50V
2710	4822 126 13881	470pF 5% 50V
2711	3198 016 31020	1nF 25V 0603
2712	2020 552 96683	220nF 10% 50V
2713	4822 126 14076	220nF +80/-20% 25V
2714	3198 017 33330	33nF 20% 16V 0603
2714	4822 126 14549	33nF 16V 0603
2715	3198 016 31020	1nF 25V 0603
2716	4822 126 14241	330pF 0603 50V
2717	5322 121 42498	680nF 5% 63V
2718	2222 867 15339	33pF 5% 50V 0603
2719	3198 016 31020	1nF 25V 0603
2720	4822 126 14076	220nF +80/-20% 25V
2721	4822 126 13881	470pF 5% 50V
2722	4822 126 13881	470pF 5% 50V
2724	2020 552 96683	220nF 10% 50V
2726	3198 017 33330	33nF 20% 16V 0603
2726	4822 126 14549	33nF 16V 0603
2727	3198 016 31020	1nF 25V 0603
2728	4822 126 14241	330pF 0603 50V
2729	5322 121 42498	680nF 5% 63V
2730	4822 126 14505	4.7nF 10% 2KV
2777	2020 552 96684	470nF 10% 25V 0805
2778	4822 124 41751	47µF 20% 50V
2779	2020 552 96684	470nF 10% 25V 0805
2780	2020 552 96684	470nF 10% 25V 0805
2781	2020 552 96684	470nF 10% 25V 0805
2786	2238 916 15641	22nF 10% 25V 0603
2914	4822 124 40248	10µF 20% 63V
2915	4822 124 12255	10µF 20% 50V
2917	4822 126 14585	100nF 10% 0805 50V
2929	4822 126 13879	220nF +80-20% 16V
2940	9965 000 14169	100µF 10V 20%
2941	4822 126 14585	100nF 10% 0805 50V
2942	4822 126 14585	100nF 10% 0805 50V
2943	4822 126 14585	100nF 10% 0805 50V
2944	4822 126 13879	220nF +80-20% 16V
2945	4822 126 14491	2.2µF 10V 0805
2946	4822 126 14491	2.2µF 10V 0805
2947	2020 012 93843	4.7µF 20% 50V
2948	9965 000 14169	100µF 10V 20%
2949	9965 000 14169	100µF 10V 20%
2950	5322 126 11583	10nF 10% 50V 0603
2951	5322 126 11583	10nF 10% 50V 0603
2952	5322 126 11578	1nF 10% 50V 0603
2985	4822 126 14315	390pF 5% 50V 0603
2987	5322 122 31863	330pF 5% 63V 0805
2989	5322 122 31863	330pF 5% 63V 0805
2990	5322 122 31863	330pF 5% 63V 0805
2991	5322 122 32531	100pF 5% 50V
2992	5322 122 31863	330pF 5% 63V 0805
2993	5322 122 32531	100pF 5% 50V
2994	5322 122 31863	330pF 5% 63V 0805
2995	5322 122 31863	330pF 5% 63V 0805
2996	5322 122 31863	330pF 5% 63V 0805
2997	5322 122 31863	330pF 5% 63V 0805
2998	5322 122 32531	100pF 5% 50V
2999	5322 122 32531	100pF 5% 50V

—WW—

3101	4822 053 20106	10MΩ 5% 0.25W
3101	4822 053 20225	2.2MΩ 5% 0.25W
3102	2312 915 11002	1kΩ 1% 0.5W
3103	2312 915 11002	1kΩ 1% 0.5W
3104	4822 116 52195	47Ω 5% 0.5W
3105	4822 050 11002	1kΩ 1% 0.4W
3106	4822 116 52256	2.2kΩ 5% 0.5W
3107	4822 116 52256	2.2kΩ 5% 0.5W
3108	2122 101 02083	1.5Ω 5% 0.5W
3111	4822 053 10152	1.5kΩ 5% 1W
3113	4822 116 52186	22Ω 5% 0.5W
3114	4822 116 83872	220Ω 5% 0.5W
3115	4822 116 52257	22kΩ 5% 0.5W
3116	4822 116 52257	22kΩ 5% 0.5W
3117	4822 116 52195	47Ω 5% 0.5W
3118	2122 101 02083	1.5Ω 5% 0.5W
3120	4822 051 20109	10Ω 5% 0.1W
3123	4822 051 30109	10Ω 5% 0.062W
3124	4822 116 52199	68Ω 5% 0.5W
3125	4822 116 52182	15Ω 5% 0.5W
3126	4822 050 21003	10kΩ 1% 0.6W
3127	4822 116 52289	5.6kΩ 5% 0.5W
3130	4822 051 30479	47Ω 5% 0.062W
3131	4822 051 30471	47Ω 5% 0.062W
3132	4822 051 20479	47kΩ 5% 0.1W
3133	4822 117 10834	47kΩ 1% 0.1W
3134	4822 051 30102	1kΩ 5% 0.062W
3135	4822 051 30101	100Ω 5% 0.062W
3136	4822 051 30109	10Ω 5% 0.062W
3137	4822 050 24702	4.7kΩ 1% 0.6W
3138	4822 051 20824	820kΩ 5% 0,1W
3140	4822 051 20223	22kΩ 5% 0.1W
3141	4822 116 52263	2.7kΩ 5% 0.5W
3142	4822 051 30332	3.3Ω 5% 0.062W
3143	4822 051 30101	100Ω 5% 0.062W
3144	4822 116 83883	470Ω 5% 0.5W
3150	4822 117 11373	100Ω 1% 0805
3151	4822 051 30109	10Ω 5% 0.062W
3152	4822 051 30102	1kΩ 5% 0.062W
3153	4822 051 20472	4.7kΩ 5% 0.1W
3155	4822 051 30101	100Ω 5% 0.062W
3156	5322 117 13017	100Ω 1% 0.063W 0603
3157	4822 051 30103	10kΩ 5% 0.062W
3158	2322 704 64709	47Ω 1% 0.063W 0603
3159	4822 051 30103	10kΩ 5% 0.062W
3160	4822 051 30102	1kΩ 5% 0.062W
3161⚠	4822 052 10221	220Ω 5% 0.33W
3162	4822 116 83883	470Ω 5% 0.5W
3163	4822 053 20106	10MΩ 5% 0.25W
3164	4822 117 13632	100kΩ 1% 0603 0.62W
3165	4822 051 30331	330Ω 5% 0.062W
3168	4822 051 20472	4.7kΩ 5% 0.1W
3170	4822 116 52291	56kΩ 5% 0.5W
3200	4822 117 11373	100Ω 1% 0805
3201	4822 117 11373	100Ω 1% 0805
3210	4822 051 30102	1kΩ 5% 0.062W
3211	4822 051 30222	2.2kΩ 5% 0.062W
3212	4822 051 30101	100Ω 5% 0.062W
3213	4822 116 52182	15Ω 5% 0.5W
3250	4822 051 20223	22kΩ 5% 0.1W
3261	4822 117 11373	100Ω 1% 0805
3262	4822 117 11373	100Ω 1% 0805
3400⚠	4822 052 11108	1Ω 5% 0.5W
3401	2120 105 93473	27Ω 5% 3W
3402	4822 053 10121	120Ω 5% 1W
3403	4822 116 52175	100Ω 5% 0.5W
3404	4822 051 30471	47Ω 5% 0.062W
3406	4822 117 11373	100Ω 1% 0805
3407	4822 051 30103	10kΩ 5% 0.062W
3409	4822 050 11002	1kΩ 1% 0.4W
3410	4822 051 20479	47kΩ 5% 0.1W
3411	2122 101 02111	39Ω 5% 0.5W
3412	4822 117 11817	1.2kΩ 1% 0.0625W
3414	4822 051 30331	330Ω 5% 0.062W
3415	3198 012 31590	15Ω 5% 3W
3417	4822 116 52176	10Ω 5% 0.5W
3418	2312 915 16803	68kΩ 1% 0.5W
3418	4822 050 25603	56kΩ 1% 0.6W
3419	4822 051 30474	470kΩ 5% 0.062W
3420	4822 051 30332	3.3Ω 5% 0.062W
3421	4822 051 30474	470kΩ 5% 0.062W
3422	4822 051 30332	3.3Ω 5% 0.062W
3423	4822 053 10688	6.8Ω 5% 1W
3425	4822 116 52176	10Ω 5% 0.5W
3426	4822 116 52176	10Ω 5% 0.5W
3427	4822 051 30334	330kΩ 5% 0.062W
3427	4822 051 30684	680kΩ 5% 0.062W
3429	3198 021 32250	2.2MΩ 5% 0603
3429	4822 051 30105	1MΩ 5% 0.062W
3431⚠	2306 207 03151	150Ω 5% 0.5W
3440	4822 051 30102	1kΩ 5% 0.062W
3441	4822 051 30223	22kΩ 5% 0.062W
3442	4822 051 30474	470kΩ 5% 0.062W
3443	4822 051 30684	680kΩ 5% 0.062W
3447	4822 117 11373	100Ω 1% 0805
3449⚠	4822 052 10101	100Ω 5% 0.33W
3450	4822 050 21003	10kΩ 1% 0.6W
3450	4822 116 52238	12kΩ 5% 0.5W
3451	4822 050 21003	10kΩ 1% 0.6W
3451	4822 116 52238	12kΩ 5% 0.5W
3454	4822 051 20108	1Ω 5% 0.1W
3455	5322 117 13056	8.2kΩ 1% 0.063W 0603
3456	4822 117 12903	1.8kΩ 1% 0.063W 0603
3457	4822 051 30152	1.5Ω 5% 0.062W
3458	4822 051 30471	47Ω 5% 0.062W
3459	4822 051 30272	2.7kΩ 5% 0.062W
3460⚠	4822 052 10108	1Ω 5% 0.33W
3461⚠	4822 052 10108	1Ω 5% 0.33W
3462⚠	4822 052 11108	1Ω 5% 0.5W
3463⚠	4822 052 11108	1Ω 5% 0.5W
3464⚠	4822 052 11108	1Ω 5% 0.5W
3465⚠	4822 052 11108	1Ω 5% 0.5W
3466	4822 051 30472	4.7Ω 5% 0.062W
3467	4822 117 13632	100kΩ 1% 0603 0.62W
3472	4822 051 30393	39kΩ 5% 0.062W
3474	4822 051 30563	56kΩ 5% 0.062W
3475	4822 051 30472	4.7Ω 5% 0.062W
3476	4822 116 83874	220kΩ 5% 0.5W
3478	4822 116 52175	100Ω 5% 0.5W
3479⚠	4822 052 10478	4.7Ω 5% 0.33W
3480⚠	4822 052 10478	4.7Ω 5% 0.33W
3480⚠	4822 052 10688	6.8Ω 5% 0.33W
3481⚠	2322 750 61001	100Ω 5% 1206
3482	4822 051 30221	220Ω 5% 0.062W
3483	4822 117 12903	1.8kΩ 1% 0.063W 0603
3485	4822 051 30471	47Ω 5% 0.062W
3486	2322 704 67502	7.5kΩ 1% 0.5W
3487	5322 117 13056	8.2kΩ 1% 0.063W 0603
3488	4822 050 21005	1MΩ 1% 0.6W
3488	4822 050 26804	680kΩ 1% 0.6W
3489	4822 051 30103	10kΩ 5% 0.062W
3490	4822 051 30332	3.3Ω 5% 0.062W
3491	4822 117 12925	47kΩ 1% 0.063W 0603
3492	4822 116 52175	100Ω 5% 0.5W
3493	4822 050 21504	150kΩ 1% 0.6W
3496	4822 051 30272	2.7kΩ 5% 0.062W
3497	4822 051 30333	33kΩ 5% 0.062W
3501	4822 116 83872	220Ω 5% 0.5W
3503	4822 050 21003	10kΩ 1% 0.6W
3504	4822 051 30222	2.2kΩ 5% 0.062W
3505	4822 116 52257	22kΩ 5% 0.5W
3506	4822 051 30562	5.6kΩ 5% 0.063W 0603
3507	4822 050 21604	160kΩ 1% 0.6W
3508	4822 116 52182	15Ω 5% 0.5W
3509⚠	2122 550 00158	VDR 1mA 612V
3510	4822 117 11454	820Ω 1% 0.1W
3511	4822 053 11222	2.2kΩ 5% 2W
3512	4822 117 12891	220kΩ 1%
3513⚠	2322 193 53474	470kΩ 5% 0,5W
3513	4822 116 52272	330k 5% 0.5W
3514	2322 193 53397	0.39Ω 5% 0.6W
3515	2322 193 53397	0.39Ω 5% 0.6W
3517	4822 117 10834	47kΩ 1% 0.1W
3518	4822 116 52245	150kΩ 5% 0.5W
3519	4822 051 30102	1kΩ 5% 0.062W
3520	4822 053 11223	22kΩ 5% 2W
3520	4822 053 11333	33kΩ 5% 2W
3521⚠	4822 053 21475	4.7MΩ 5% 0.5W
3522	4822 117 11507	6.8kΩ 1% 0.1W
3523	4822 051 20105	1MΩ 5% 0.1W
3524	4822 051 30333	33kΩ 5% 0.062W
3525	4822 051 30479	47Ω 5% 0.062W
3526	4822 116 83303	0.1Ω 2W
3527	4822 117 11951	2kΩ 1% 0.1W
3528	4822 051 30103	10kΩ 5% 0.062W
3529	4822 051 30472	4.7Ω 5% 0.062W
3530	4822 051 30102	1kΩ 5% 0.062W
3531	4822 117 11507	6.8kΩ 1% 0.1W
3532	4822 117 12925	47kΩ 1% 0.063W 0603
3533	4822 116 52182	15Ω 5% 0.5W
3534	4822 117 12925	47kΩ 1% 0.063W 0603
3535	4822 051 30479	47Ω 5% 0.062W
3536	4822 052 10102	1kΩ 5% 0.33W
3537	4822 116 52182	15Ω 5% 0.5W
3540	4822 050 23303	33kΩ 1% 0.6W
3543	4822 050 24708	4.7Ω 1% 0.6W
3547	4822 051 30008	Jumper 0603
3549	2322 704 62204	220kΩ 1% 0.063W 0603
3550⚠	2122 663 00018	4.7Ω 20%
3551	4822 116 83872	220Ω 5% 0.5W
3552	4822 051 30222	2.2kΩ 5% 0.062W
3553	4822 051 30103	10kΩ 5% 0.062W
3610	4822 051 30223	22kΩ 5% 0.062W
3611	4822 051 30222	2.2kΩ 5% 0.062W
3620	2122 101 02083	1.5Ω 5% 0.5W
3620	4822 050 21808	1.8Ω 1% 0,6W
3620	4822 116 80176	1Ω 5% 0.5W
3621	2122 101 02083	1.5Ω 5% 0.5W
3621	4822 116 80176	1Ω 5% 0.5W
3622	2122 101 02083	1.5Ω 5% 0.5W
3622	4822 050 21808	1.8Ω 1% 0,6W
3623	4822 116 52251	18kΩ 5% 0.5W
3623	4822 116 52257	22kΩ 5% 0.5W
3624⚠	4822 052 10158	1.5Ω 5% 0.33W
3625	4822 116 52219	330Ω 5% 0.5W
3625	4822 116 83872	220Ω 5% 0.5W
3626	4822 116 52219	330Ω 5% 0.5W
3626	4822 116 83872	220Ω 5% 0.5W
3627	4822 051 20223	22kΩ 5% 0.1W
3630	4822 051 30333	33kΩ 5% 0.062W
3631	4822 051 30222	2.2kΩ 5% 0.062W
3632	4822 051 30393	39kΩ 5% 0.062W
3633	4822 051 30563	56kΩ 5% 0.062W
3634	4822 116 83882	39kΩ 5% 0.5W
3635	4822 116 52219	330Ω 5% 0.5W
3636	4822 051 30223	22kΩ 5% 0.062W
3637	4822 051 30103	10kΩ 5% 0.062W
3638	4822 051 30474	470kΩ 5% 0.062W
3639	4822 051 30563	56kΩ 5% 0.062W
3640	4822 051 30222	2.2kΩ 5% 0.062W
3641	4822 116 83883	470Ω 5% 0.5W
3642	4822 101 11193	47kΩ 30% 0.1W
3643	4822 051 30334	330kΩ 5% 0.062W
3644	4822 051 30221	220Ω 5% 0.062W
3645	4822 116 52245	150kΩ 5% 0.5W
3646	4822 117 12925	47kΩ 1% 0.063W 0603
3647	4822 051 20228	2.2Ω 5% 0.1W
3649	4822 051 30103	10kΩ 5% 0.062W

3653	4822 051 20223	22kΩ 5% 0.1W
3655	4822 051 30123	12kΩ 5% 0.1W
3656	4822 117 11817	1.2kΩ 1% 0.0625W
3657	4822 051 30223	22kΩ 5% 0.062W
3658	4822 051 30223	22kΩ 5% 0.062W
3659	4822 051 30222	2.2kΩ 5% 0.062W
3660	4822 051 30562	5.6kΩ 5% 0.063W 0603
3661	4822 116 52219	330Ω 5% 0.5W
3661	4822 116 83883	470Ω 5% 0.5W
3662	4822 051 30152	1.5Ω 5% 0.062W
3665	4822 051 30479	47Ω 5% 0.062W
3681	4822 116 52207	1.2kΩ 5% 0.5W
3682	4822 117 13632	100kΩ 1% 0603 0.62W
3683	4822 051 30103	10kΩ 5% 0.062W
3684	4822 051 30682	6.8Ω 5% 0.062W
3685	4822 051 30273	27kΩ 5% 0.062W
3686	4822 051 30563	56kΩ 5% 0.062W
3687	4822 116 52207	1.2kΩ 5% 0.5W
3688	4822 051 20684	680kΩ 5% 0.1W
3690	4822 051 30109	10Ω 5% 0.062W
3701	4822 051 30103	10kΩ 5% 0.062W
3702	4822 051 30682	6.8Ω 5% 0.062W
3703	4822 051 30333	33kΩ 5% 0.062W
3704	4822 117 10833	10kΩ 1% 0.1W
3705	4822 051 20828	8.2Ω 5% 0.1W
3706	2322 704 65102	5.1kΩ 1% 0603
3707	4822 051 30683	68kΩ 5% 0.062W
3708	4822 051 30563	56kΩ 5% 0.062W
3709	4822 117 11503	220Ω 1% 0.1W
3710	4822 051 30223	22kΩ 5% 0.062W
3711	4822 050 21204	120kΩ 1% 0,6W
3712	4822 117 12706	10kΩ 1% 0.063W 0603
3713	4822 116 83884	47kΩ 5% 0.5W
3714	4822 117 12925	47kΩ 1% 0.063W 0603
3715	4822 117 12925	47kΩ 1% 0.063W 0603
3716	4822 117 12925	47kΩ 1% 0.063W 0603
3717	4822 117 13632	100kΩ 1% 0603 0.62W
3718	4822 117 13632	100kΩ 1% 0603 0.62W
3721	2322 704 65102	5.1kΩ 1% 0603
3722	4822 051 30683	68kΩ 5% 0.062W
3723	4822 051 30563	56kΩ 5% 0.062W
3724	4822 117 11503	220Ω 1% 0.1W
3725	4822 051 30223	22kΩ 5% 0.062W
3726	4822 117 11503	220Ω 1% 0.1W
3727	4822 117 11503	220Ω 1% 0.1W
3743	4822 117 11449	2.2kΩ 5% 0.1W 0805
3745	4822 051 30102	1kΩ 5% 0.062W
3746	4822 051 30223	22kΩ 5% 0.062W
3748	4822 051 30008	Jumper 0603
3749	4822 116 83883	470Ω 5% 0.5W
3750	4822 117 11449	2.2kΩ 5% 0.1W 0805
3760	4822 117 12891	220kΩ 1%
3790	4822 051 30272	2.7kΩ 5% 0.062W
3791	4822 051 30272	2.7kΩ 5% 0.062W
3792	4822 051 30103	10kΩ 5% 0.062W
3793	4822 051 30103	10kΩ 5% 0.062W
3798	4822 051 30153	15kΩ 5% 0.062W
3903	4822 051 20561	560Ω 5% 0.1W
3904⚠	4822 052 10688	6.8Ω 5% 0.33W
3907	4822 051 20479	47kΩ 5% 0.1W
3910	4822 117 12521	68Ω 1% 0.1W
3928	4822 051 30008	Jumper 0603
3938	4822 117 11373	100Ω 1% 0805
3939	4822 051 30103	10kΩ 5% 0.062W
3940	4822 051 20561	560Ω 5% 0.1W
3941⚠	4822 052 10688	6.8Ω 5% 0.33W
3942	4822 117 11373	100Ω 1% 0805
3943	4822 051 30103	10kΩ 5% 0.062W
3945	4822 117 12955	2.7kΩ 1% 0.1W 0805
3959	4822 117 10353	150Ω 1% 0.1W
3960	4822 117 10353	150Ω 1% 0.1W
3961	4822 117 10353	150Ω 1% 0.1W
3962	4822 117 10353	150Ω 1% 0.1W
3965	4822 117 10353	150Ω 1% 0.1W
3966	4822 117 10353	150Ω 1% 0.1W
3967	4822 116 52201	75Ω 5% 0.5W
3968	4822 116 52201	75Ω 5% 0.5W
3969	4822 051 20008	Jumper 0805
3970	4822 051 20008	Jumper 0805
3971	4822 116 52201	75Ω 5% 0.5W
3972	2122 101 02073	82Ω 5% 0.5W
3973	4822 116 52201	75Ω 5% 0.5W
3974	4822 116 52201	75Ω 5% 0.5W
3975	4822 116 52201	75Ω 5% 0.5W
3976	4822 117 11373	100Ω 1% 0805
3977	4822 117 11373	100Ω 1% 0805
3978	4822 117 11373	100Ω 1% 0805
3979	4822 116 52201	75Ω 5% 0.5W
3980	4822 117 11373	100Ω 1% 0805
3981	4822 051 20822	8.2kΩ 5% 0.1W
3982	4822 051 20392	2.9kΩ 5% 0.1W
3983	4822 116 52175	100Ω 5% 0.5W
3984	4822 051 20822	8.2kΩ 5% 0.1W
3985	4822 116 52201	75Ω 5% 0.5W

3986	4822 116 52276	3.9Ω 5% 0.5W
3987	4822 116 52175	100Ω 5% 0.5W
3988	4822 051 10102	1kΩ 2% 0.25W
3989	4822 050 11002	1kΩ 1% 0.4W
3990	4822 117 10353	150Ω 1% 0.1W
3991	4822 117 10353	150Ω 1% 0.1W
3992	4822 117 10353	150Ω 1% 0.1W
3993	4822 116 83868	150Ω 5% 0.5W
3994	4822 051 10102	1kΩ 2% 0.25W
3995	4822 051 10102	1kΩ 2% 0.25W
3996	4822 117 10353	150Ω 1% 0.1W
3997	4822 117 10353	150Ω 1% 0.1W
9101	3198 036 90010	Wire 0.58mm
9102	3198 036 90010	Wire 0.58mm
9103	4822 051 20008	Jumper 0805
9105	4822 051 20008	Jumper 0805
9107	4822 051 30008	Jumper 0603
9108	4822 051 30008	Jumper 0603
9128	4822 051 30008	Jumper 0603
9200	4822 051 20008	Jumper 0805
9202	4822 051 30008	Jumper 0603
9203	4822 051 30008	Jumper 0603
9204	4822 051 30008	Jumper 0603
9207	4822 051 30008	Jumper 0603
9208	4822 051 20008	Jumper 0805
9209	4822 051 20008	Jumper 0805
9210	4822 051 30008	Jumper 0603
9211	4822 051 30008	Jumper 0603
9212	4822 051 20008	Jumper 0805
9214	4822 051 20008	Jumper 0805
9215	4822 051 20008	Jumper 0805
9216	4822 051 20008	Jumper 0805
9217	4822 051 20008	Jumper 0805
9218	4822 051 20008	Jumper 0805
9219	4822 051 20008	Jumper 0805
9221	4822 051 20008	Jumper 0805
9222	4822 051 20008	Jumper 0805
9251	4822 051 30008	Jumper 0603
9260	3198 036 90010	Wire 0.58mm
9261	4822 051 20008	Jumper 0805
9262	4822 051 20008	Jumper 0805
9263	4822 051 20008	Jumper 0805
9264	4822 051 20008	Jumper 0805
9418	4822 051 20008	Jumper 0805
9421	4822 051 20008	Jumper 0805
9422	4822 051 30008	Jumper 0603
9424	4822 051 30008	Jumper 0603
9427	4822 051 30008	Jumper 0603
9428	4822 051 30008	Jumper 0603
9429	4822 051 30008	Jumper 0603
9430	4822 051 30008	Jumper 0603
9431	4822 051 30008	Jumper 0603
9432	4822 051 30008	Jumper 0603
9433	4822 051 30008	Jumper 0603
9434	4822 051 30008	Jumper 0603
9435	4822 051 30008	Jumper 0603
9436	4822 051 30008	Jumper 0603
9437	4822 051 30008	Jumper 0603
9438	4822 051 30008	Jumper 0603
9440	4822 051 30008	Jumper 0603
9441	4822 051 30008	Jumper 0603
9443	4822 051 30008	Jumper 0603
9481	4822 051 30008	Jumper 0603
9483	4822 051 30008	Jumper 0603
9499	4822 051 30008	Jumper 0603
9505	4822 051 20008	Jumper 0805
9560	4822 051 30008	Jumper 0603
9561	4822 051 20008	Jumper 0805
9621	4822 051 30008	Jumper 0603
9624	4822 051 30008	Jumper 0603
9676	4822 051 30008	Jumper 0603
9677	4822 051 20008	Jumper 0805
9702	4822 051 30008	Jumper 0603
9703	3198 036 90010	Wire 0.58mm
9704	4822 051 20008	Jumper 0805
9705	4822 051 20008	Jumper 0805
9706	4822 051 30471	47Ω 5% 0.062W
9707	4822 051 30008	Jumper 0603
9713	4822 051 30008	Jumper 0603
9714	4822 051 20008	Jumper 0805
9716	4822 051 20008	Jumper 0805
9717	4822 051 30008	Jumper 0603
9908	4822 051 30008	Jumper 0603
9927	4822 051 20008	Jumper 0805
9928	4822 051 20008	Jumper 0805
9929	3198 036 90010	Wire 0.58mm
9960	4822 051 30008	Jumper 0603
9961	3198 036 90010	Wire 0.58mm
9962	4822 051 30008	Jumper 0603
9966	4822 051 30008	Jumper 0603
9979	4822 051 20008	Jumper 0805
9981	4822 051 20008	Jumper 0805
9985	4822 051 30008	Jumper 0603
9986	4822 051 20008	Jumper 0805

9987	4822 051 20008	Jumper 0805
9988	4822 051 20008	Jumper 0805
9989	4822 051 20008	Jumper 0805
9990	4822 051 20008	Jumper 0805
9991	4822 051 20008	Jumper 0805
9992	4822 051 20008	Jumper 0805
9993	4822 051 20008	Jumper 0805
9994	4822 051 20008	Jumper 0805
9996	3198 036 90010	Wire 0.58mm
9997	4822 051 20008	Jumper 0805

∿∿∿

5100⚠	3104 308 20431	Transf. BS25126-03
5102	2422 535 94639	10μH 20%
5103	4822 526 10704	Bead 50 Ω at 100MHz
5104	4822 157 11411	Bead 80Ω at 100MHz
5105	2422 535 94632	1μH 30%
5106	4822 526 10704	Bead 50 Ω at 100MHz
5111	4822 157 11411	Bead 80Ω at 100MHz
5113	4822 157 11411	Bead 80Ω at 100MHz
5113	4822 526 10704	Bead 50 Ω at 100MHz
5130	4822 157 11411	Bead 80Ω at 100MHz
5400	4822 157 11869	33μH 10%
5401	2422 536 00059	12μH 10%
5402	3198 018 21510	150μH 10%
5410⚠	3128 138 39091	Transformer CE165T
5411	4822 157 71097	0.56μH 10%
5421	3104 308 20591	Linearity coil 32"
5421	3104 308 20611	Linearity coil 5μH 30"
5421	3128 138 56152	Linearity coil (28")
5422	3104 308 20671	Bridge coil BC21215-01
5422	3104 308 20752	Bridge coil BC21237-0
5423	4822 157 71097	0.56μH 10%
5425	4822 157 11411	Bead 80Ω at 100MHz
5426	4822 157 70826	2.4μH
5430⚠	3104 308 20491	LOT 1392.9014A
5430⚠	3104 308 20941	LOT 1392.3001B
5461	4822 157 11411	Bead 80Ω at 100MHz
5463	4822 157 11411	Bead 80Ω at 100MHz
5465	4822 157 11411	Bead 80Ω at 100MHz
5467	4822 157 11411	Bead 80Ω at 100MHz
5469	4822 157 11411	Bead 80Ω at 100MHz
5503⚠	2422 549 44877	Filter 45mH DMF2845H
5505	4822 157 11411	Bead 80Ω at 100MHz
5506⚠	2422 531 02501	Transf. S30940-04
5507	4822 157 11411	Bead 80Ω at 100MHz
5509	4822 157 11411	Bead 80Ω at 100MHz
5511	3104 308 20511	Filter mains 40mH
5513	4822 157 11869	33μH 10%
5514	4822 157 11869	33μH 10%
5515	4822 157 11869	33μH 10%
5620	4822 157 11771	0.09μH 10%
5621⚠	3104 308 20571	Transf. S13974-03
5701	2422 536 00385	68μH 10%
5702	2422 536 00385	68μH 10%
5703	4822 157 11716	Bead 30Ω at 100MHz
5707	4822 157 11411	Bead 80Ω at 100MHz
5708	4822 157 11411	Bead 80Ω at 100MHz
5711	4822 157 11411	Bead 80Ω at 100MHz
5712	4822 157 11411	Bead 80Ω at 100MHz
5901	4822 157 11299	10μH 5%
5902	4822 157 11869	33μH 10%
5903	4822 157 10359	33μH
5904	4822 157 11411	Bead 80Ω at 100MHz

—▷|—

6080	4822 130 11397	BAS316
6082	4822 130 80622	BAT54
6084	4822 130 11522	UDZ15B
6100	9340 548 69115	PDZ27B
6103	4822 130 41601	BYV95A
6105	4822 130 34281	BZX79-B15
6106	3198 010 52290	BZX79-B22
6108	4822 130 11528	1PS76SB10
6109	4822 130 31083	BYW55
6110	9340 418 70133	BYV27-600
6111	9322 161 78682	SB360L-7024
6112	4822 130 11551	UDZS10B
6115	4822 130 11397	BAS316
6115	4822 130 11528	1PS76SB10
6120	4822 130 30621	1N4148
6121	4822 130 30621	1N4148
6122	3198 010 53980	BZX79-B3V9
6123	9340 548 71115	PDZ33B
6124	9340 548 71115	PDZ33B
6125	9340 548 71115	PDZ33B
6130	4822 130 11596	BYW29EX-200
6132	9322 171 80685	BZX384-B6V8
6133	4822 130 11397	BAS316
6134	4822 130 11397	BAS316

6141	4822 130 11522	UDZ15B
6142	4822 130 11528	1PS76SB10
6144	4822 130 11397	BAS316
6147	4822 130 34278	BZX79-B6V8
6148	5322 130 31938	BYV27-200
6149	4822 130 11397	BAS316
6200	9340 548 71115	PDZ33B
6201	4822 130 11397	BAS316
6202	4822 130 11397	BAS316
6400	4822 130 70055	BYV27-400
6405	4822 130 34383	BZX79-B47
6406	4822 130 11397	BAS316
6407	4822 130 11397	BAS316
6408	4822 130 41601	BYV95A
6421	4822 130 10753	BY359X-1500
6422	4822 130 10218	BY229X-800
6442	4822 130 11522	UDZ15B
6455	4822 130 11397	BAS316
6456	5322 130 34337	BAV99
6457	9322 102 64685	UDZ2.7B
6458	3198 020 55680	BZX384-C5V6
6460	4822 130 41487	BYV95C
6462	9322 192 67682	BYW76-PK1
6464	9322 192 67682	BYW76-PK1
6465	3139 120 52021	BYV29X-500
6480	4822 130 41601	BYV95A
6481	4822 130 11522	UDZ15B
6482	4822 130 11397	BAS316
6483	4822 130 80622	BAT54
6493	4822 130 80622	BAT54
6505	4822 130 34281	BZX79-B15
6506	4822 130 80622	BAT54
6509	4822 130 11397	BAS316
6510	4822 130 61219	BZX79-B10
6511	4822 130 11397	BAS316
6512	4822 130 11397	BAS316
6514	5322 130 31932	BZT03-C200
6515	4822 130 33657	BZV85-C6V8
6516	4822 130 11397	BAS316
6517	4822 130 80622	BAT54
6525▲	3198 010 10640	Bridge cell GBU4K
6530	4822 130 41487	BYV95C
6534	9322 165 72687	DTV1500MFP
6535	4822 130 11572	STPS8H100F
6536	4822 130 11572	STPS8H100F
6537	4822 130 11397	BAS316
6614	4822 130 11528	1PS76SB10
6615	4822 130 11397	BAS316
6616	4822 130 11397	BAS316
6617	4822 130 11397	BAS316
6618	4822 130 11397	BAS316
6619	4822 130 41601	BYV95A
6620	4822 130 10871	SBYV27-200
6621	4822 130 41601	BYV95A
6622	5322 130 32296	BZV85-C10
6623	4822 130 11397	BAS316
6624	4822 130 11397	BAS316
6625	4822 130 11397	BAS316
6626	4822 130 11397	BAS316
6627	4822 130 11397	BAS316
6701	4822 130 11397	BAS316
6745	4822 130 11551	UDZS10B
6950	4822 130 11416	PDZ6.8B
6951	4822 130 11416	PDZ6.8B
6953	4822 130 11416	PDZ6.8B
6954	4822 130 11416	PDZ6.8B
6955	4822 130 11416	PDZ6.8B
6956	4822 130 11416	PDZ6.8B
6957	4822 130 11416	PDZ6.8B
6958	4822 130 11416	PDZ6.8B
6959	4822 130 11416	PDZ6.8B
6960	9340 548 61115	PDZ12B
6961	4822 130 11416	PDZ6.8B
6962	4822 130 11416	PDZ6.8B

7100	4822 130 44568	BC557B
7101	4822 130 40981	BC337-25
7102	4822 130 11417	STP3NB60FP
7103▲	9322 149 04682	TCET1102
7130	5322 130 60159	BC846B
7131	4822 130 11336	STP16NE06FP
7132	5322 130 60159	BC846B
7133	4822 130 60373	BC856B
7140	5322 130 60159	BC846B
7141	4822 130 11336	STP16NE06FP
7210	5322 130 60159	BC846B
7211	4822 130 42804	BC817-25
7408	5322 130 44647	BC368
7409	5322 130 60159	BC846B
7421	9340 210 30127	BU2520DX
7440	4822 209 70672	LM358N SEL.
7441	4822 130 60373	BC856B
7442	4822 130 60373	BC856B
7443	5322 130 60159	BC846B
7445	5322 130 60159	BC846B
7450	5322 209 61472	LM393M
7450	5322 209 70225	LM393D
7455	4822 209 73852	PMBT2369
7480	4822 130 11417	STP3NB60FP
7482▲	4822 130 11418	TCDT1102G
7486	5322 130 60159	BC846B
7487	5322 130 60159	BC846B
7501	5322 130 60159	BC846B
7502	4822 130 40959	BC547B
7504	9322 194 28687	STP5NK40ZFP
7506	4822 209 14933	TL431IZ
7507▲	9322 149 04682	TCET1102
7528	4822 130 40981	BC337-25
7529	4822 130 44461	BC546B
7530	5322 130 60159	BC846B
7611	5322 130 60159	BC846B
7612	5322 130 60159	BC846B
7613	4822 209 14933	TL431IZ
7614	5322 130 60159	BC846B
7620	4822 209 90009	TDA8177
7641	5322 130 60159	BC846B
7653	5322 130 60159	BC846B
7654	4822 130 60373	BC856B
7680	4822 209 60956	TDA7052/N2
7681	5322 130 60159	BC846B
7682	5322 130 44647	BC368
7700	9322 163 86682	TDA7490L
7701	5322 130 60159	BC846B
7703	5322 130 60159	BC846B
7704	5322 130 60159	BC846B
7705	5322 130 60159	BC846B
7706	4822 130 60373	BC856B
7707	5322 130 60159	BC846B
7902	5322 130 60159	BC846B
7908	5322 130 60159	BC846B
7910	9322 166 03682	LD1085V36
7911	4822 209 72042	L78L05ACZ

Small Signal Board [B]

Various

0072	3104 301 24191	Frame SSB A-side
0073	3104 301 24211	Cover SSB A-side
0074	3104 301 24221	Cover SSB Z-side
0075	3104 301 24201	Frame SSB Z-side
1001	2422 543 89022	Xtal 6MHz 20p
1301	2422 540 98456	Resonator 12MHz
1305	2422 543 01184	Xtal 4.433619MHz 20p
1308	2422 543 01183	Xtal 3.579545MHz 16p
1402	2422 025 16966	Connector 5p m SMD
1403▲	2422 086 11092	Fuse 500mA 50V F SMD
1407	2422 549 44324	Filt. 5.5/5.74MHz
1408	2422 549 44372	SAW 38.9MHz K3953L
1409	2422 549 44369	SAW 38.9MHz K9656L
1651	2422 543 89019	Xtal 18.432MHz 12p
1680	2422 025 16961	Connector 6p m SMD
1702	2422 540 98456	Resonator 12MHz
8402▲	3104 311 06411	Cable assy + ferr.
8680▲	3104 311 06421	Cable assy + ferr.

⊣⊢

2001	2222 867 15339	33pF 5% 50V 0603
2002	4822 126 11669	27pF 5% 50V 0603
2003	4822 126 13879	220nF +80-20% 16V
2004	4822 126 13879	220nF +80-20% 16V
2005	2238 586 59812	100nF 20% 50V 0603
2006	2238 586 59812	100nF 20% 50V 0603
2007	2238 586 59812	100nF 20% 50V 0603
2008	2238 586 59812	100nF 20% 50V 0603
2010	4822 126 11785	47pF 5% 50V 0603
2011	4822 126 11785	47pF 5% 50V 0603
2012	4822 126 11785	47pF 5% 50V 0603
2013	4822 124 12095	100µF 20% 16V
2016	4822 124 12095	100µF 20% 16V
2017	2238 586 59812	100nF 20% 50V 0603
2019	2238 586 59812	100nF 20% 50V 0603
2020	4822 126 13883	220pF 5% 50V
2022	2238 586 59812	100nF 20% 50V 0603
2023	2238 586 59812	100nF 20% 50V 0603
2024	2238 586 59812	100nF 20% 50V 0603
2025	2238 586 59812	100nF 20% 50V 0603
2026	2238 586 59812	100nF 20% 50V 0603
2027	2238 586 59812	100nF 20% 50V 0603
2028	2238 586 59812	100nF 20% 50V 0603
2029	2238 586 59812	100nF 20% 50V 0603
2031	2238 586 59812	100nF 20% 50V 0603
2033	4822 126 14226	82pF 5% 50V 0603
2034	4822 126 14226	82pF 5% 50V 0603
2035	4822 126 14226	82pF 5% 50V 0603
2036	4822 126 14226	82pF 5% 50V 0603
2037	4822 126 14226	82pF 5% 50V 0603
2038	2238 586 59812	100nF 20% 50V 0603
2039	2238 586 59812	100nF 20% 50V 0603
2040	2238 586 59812	100nF 20% 50V 0603
2302	2238 586 59812	100nF 20% 50V 0603
2303	2022 552 05679	1µF 10% 16V 0805
2304	4822 122 33741	10pF 10% 50V
2305	2238 586 59812	100nF 20% 50V 0603
2306	4822 126 13881	470pF 5% 50V
2307	2238 586 59812	100nF 20% 50V 0603
2308	4822 122 33741	10pF 10% 50V
2312	2020 552 96659	33µF 5% 50V 1206
2313	2020 552 96685	100nF 5% 25V 1206
2314	4822 124 12095	100µF 20% 16V
2315	2238 586 59812	100nF 20% 50V 0603
2316	2238 586 59812	100nF 20% 50V 0603
2317	2022 552 05679	1µF 10% 16V 0805
2318	2238 916 15641	22nF 10% 25V 0603
2319	4822 126 14247	1.5nF 50V 0603
2320	4822 122 33741	10pF 10% 50V
2321	2238 586 59812	100nF 20% 50V 0603
2322	2238 586 59812	100nF 20% 50V 0603
2323	2238 586 59812	100nF 20% 50V 0603
2324	5322 126 11583	10nF 10% 50V 0603
2325	2238 586 59812	100nF 20% 50V 0603
2326	5322 126 11583	10nF 10% 50V 0603
2327	4822 051 30759	75Ω 5% 0.062W
2328	4822 122 33761	22pF 5% 50V
2329	2238 586 59812	100nF 20% 50V 0603
2330	2238 586 59812	100nF 20% 50V 0603
2331	2238 586 59812	100nF 20% 50V 0603
2332	2238 586 59812	100nF 20% 50V 0603
2333	4822 126 14491	2.2µF 10V 0805
2334	4822 126 14491	2.2µF 10V 0805
2336	4822 126 14491	2.2µF 10V 0805
2338	2238 586 59812	100nF 20% 50V 0603
2340	4822 124 12095	100µF 20% 16V
2350	2238 586 59812	100nF 20% 50V 0603
2351	2238 586 59812	100nF 20% 50V 0603
2352	2238 586 59812	100nF 20% 50V 0603
2353	2238 586 59812	100nF 20% 50V 0603
2354	2238 586 59812	100nF 20% 50V 0603
2355	4822 051 30759	75Ω 5% 0.062W
2356	2238 586 59812	100nF 20% 50V 0603
2357	2238 586 59812	100nF 20% 50V 0603
2358	5322 126 11579	3.3nF 10% 63V
2359	4822 122 33752	15pF 5% 50V
2360	3198 016 31280	1.2pF 0.25pF 50V 0603
2361	3198 016 31280	1.2pF 0.25pF 50V 0603
2362	4822 126 11663	12pF 5% 50V 0603
2363	4822 126 13881	470pF 5% 50V
2364	4822 051 30759	75Ω 5% 0.062W
2365	2238 586 59812	100nF 20% 50V 0603
2366	2238 586 59812	100nF 20% 50V 0603
2367	2238 586 59812	100nF 20% 50V 0603
2368	2238 586 59812	100nF 20% 50V 0603
2369	2238 586 59812	100nF 20% 50V 0603
2370	2238 586 59812	100nF 20% 50V 0603
2371	4822 126 13193	4.7nF 10% 63V
2372	4822 126 14043	1µF +80-20% 16V 0805
2373	2238 586 59812	100nF 20% 50V 0603
2374	4822 126 14491	2.2µF 10V 0805
2375	2238 916 15641	22nF 10% 25V 0603
2376	2238 586 59812	100nF 20% 50V 0603
2377	4822 124 12095	100µF 20% 16V
2378	2238 586 59812	100nF 20% 50V 0603
2383	4822 051 30759	75Ω 5% 0.062W
2384	2238 586 59812	100nF 20% 50V 0603
2385	2238 586 59812	100nF 20% 50V 0603
2386	4822 126 13883	220pF 5% 50V
2390	2238 586 59812	100nF 20% 50V 0603
2391	2238 586 59812	100nF 20% 50V 0603
2392	4822 126 13193	4.7nF 10% 63V
2394	4822 126 14491	2.2µF 10V 0805
2404	2022 552 05615	2.2µF 10% 6.3V 0805
2404	2022 552 05679	1µF 10% 16V 0805
2405	4822 126 13193	4.7nF 10% 63V
2406	4822 126 13883	220pF 5% 50V
2407	4822 126 14221	68pF 5% 50V NP0 0603
2408	3198 016 32780	2.7pF 10% 50V 0603
2409	4822 126 14491	2.2µF 10V 0805
2411	2238 586 59812	100nF 20% 50V 0603
2412	4822 126 13193	4.7nF 10% 63V
2417	3198 017 44740	470nF 10V 0603
2418	4822 126 13956	6.8pF 5% 63V 0603
2420	3198 016 31510	150pF 10% 50V 0603
2420	4822 122 33753	150pF 5% NP0 50V
2422	2238 586 59812	100nF 20% 50V 0603
2424	2238 586 59812	100nF 20% 50V 0603

2425	4822 124 12095	100µF 20% 16V
2431	2238 586 59812	100nF 20% 50V 0603
2501	4822 126 11785	47pF 5% 50V 0603
2502	2022 552 05679	1µF 10% 16V 0805
2502	4822 126 14107	330nF +-80/-20% 25V
2503	2022 552 05679	1µF 10% 16V 0805
2503	4822 126 14107	330nF +-80/-20% 25V
2504	2022 552 05679	1µF 10% 16V 0805
2504	4822 126 14107	330nF +-80/-20% 25V
2505	2022 552 05679	1µF 10% 16V 0805
2505	4822 126 14107	330nF +-80/-20% 25V
2506	2022 552 05679	1µF 10% 16V 0805
2506	4822 126 14107	330nF +-80/-20% 25V
2507	2022 552 05679	1µF 10% 16V 0805
2507	4822 126 14107	330nF +-80/-20% 25V
2508	4822 124 12095	100µF 20% 16V
2510	2022 552 05679	1µF 10% 16V 0805
2511	2022 552 05679	1µF 10% 16V 0805
2512	4822 126 13879	220nF +80-20% 16V
2513	4822 124 12084	1µF 20% 50V
2515	2020 552 94427	100pF 5% 50V
2516	2020 552 96221	10µF 20% 6.3V 0805
2520	2238 586 59812	100nF 20% 50V 0603
2521	2238 586 59812	100nF 20% 50V 0603
2522	4822 126 13881	470pF 5% 50V
2523	3198 016 31020	1nF 25V 0603
2524	2238 586 59812	100nF 20% 50V 0603
2525	4822 126 13881	470pF 5% 50V
2526	3198 016 31020	1nF 25V 0603
2528	4822 126 14585	100nF 10% 0805 50V
2529	4822 126 14472	1µF 10% 10V 0805
2530	4822 126 14472	1µF 10% 10V 0805
2546	4822 124 23002	10µF 16V
2547	4822 124 23002	10µF 16V
2548	4822 124 23002	10µF 16V
2549	4822 124 23002	10µF 16V
2550	2020 552 94427	100pF 5% 50V
2552	4822 126 13881	470pF 5% 50V
2553	4822 126 13881	470pF 5% 50V
2554	4822 126 13881	470pF 5% 50V
2555	4822 126 13881	470pF 5% 50V
2562	3198 016 31020	1nF 25V 0603
2563	3198 016 31020	1nF 25V 0603
2564	3198 016 31020	1nF 25V 0603
2565	3198 016 31020	1nF 25V 0603
2566	3198 016 31020	1nF 25V 0603
2567	3198 016 31020	1nF 25V 0603
2568	3198 016 31020	1nF 25V 0603
2569	3198 016 31020	1nF 25V 0603
2570	3198 016 31020	1nF 25V 0603
2571	2020 552 94427	100pF 5% 50V
2571	4822 051 30759	75Ω 5% 0.062W
2574	3198 016 31020	1nF 25V 0603
2575	3198 016 31020	1nF 25V 0603
2576	3198 016 31020	1nF 25V 0603
2577	3198 016 31020	1nF 25V 0603
2578	2020 552 94427	100pF 5% 50V
2579	2020 552 94427	100pF 5% 50V
2580	3198 016 31020	1nF 25V 0603
2581	3198 016 31020	1nF 25V 0603
2582	3198 016 31020	1nF 25V 0603
2583	3198 016 31020	1nF 25V 0603
2593	3198 016 31020	1nF 25V 0603
2594	3198 016 31020	1nF 25V 0603
2595	3198 016 31020	1nF 25V 0603
2609	3198 016 31020	1nF 25V 0603
2610	4822 126 14238	2.2nF 50V 0603
2611	3198 016 31020	1nF 25V 0603
2634	3198 016 31020	1nF 25V 0603
2640	4822 126 13879	220nF +80-20% 16V
2643	2022 552 05679	1µF 10% 16V 0805
2643	4822 126 14107	330nF +-80/-20% 25V
2644	3198 016 31020	1nF 25V 0603
2645	2022 552 05679	1µF 10% 16V 0805
2645	4822 126 14107	330nF +-80/-20% 25V
2646	4822 126 14491	2.2µF 10V 0805
2649	4822 126 14491	2.2µF 10V 0805
2651	2238 586 59812	100nF 20% 50V 0603
2652	4822 126 11785	47pF 5% 50V 0603
2653	2022 552 05679	1µF 10% 16V 0805
2653	4822 126 14107	330nF +-80/-20% 25V
2654	4822 126 13881	470pF 5% 50V
2659	4822 126 13881	470pF 5% 50V
2660	4822 126 13881	470pF 5% 50V
2661	2022 552 05679	1µF 10% 16V 0805
2661	4822 126 14107	330nF +-80/-20% 25V
2662	2022 552 05679	1µF 10% 16V 0805
2662	4822 126 14107	330nF +-80/-20% 25V
2663	4822 126 13881	470pF 5% 50V
2664	4822 126 13881	470pF 5% 50V
2665	4822 124 12095	100µF 20% 16V
2666	4822 124 12095	100µF 20% 16V
2667	3198 016 33380	3.3pF 50V 0603
2668	3198 016 33380	3.3pF 50V 0603
2670	2238 586 59812	100nF 20% 50V 0603
2673	3198 016 31020	1nF 25V 0603
2674	3198 016 31020	1nF 25V 0603
2677	4822 124 23002	10µF 16V
2678	4822 124 23002	10µF 16V
2679	2238 586 59812	100nF 20% 50V 0603
2680	4822 124 23002	10µF 16V
2681	2238 586 59812	100nF 20% 50V 0603
2682	4822 124 23002	10µF 16V
2686	3198 016 31020	1nF 25V 0603
2687	3198 016 31020	1nF 25V 0603
2690	2238 586 59812	100nF 20% 50V 0603
2693	4822 126 13883	220pF 5% 50V
2694	3198 016 31020	1nF 25V 0603
2695	4822 124 12095	100µF 20% 16V
2701	4822 126 11663	12pF 5% 50V 0603
2704	4822 126 11663	12pF 5% 50V 0603
2707	4822 126 11663	12pF 5% 50V 0603
2709	4822 126 13879	220nF +80-20% 16V
2710	4822 126 13879	220nF +80-20% 16V
2711	2238 586 59812	100nF 20% 50V 0603
2712	2238 586 59812	100nF 20% 50V 0603
2713	4822 122 33761	22pF 5% 50V
2714	4822 122 33761	22pF 5% 50V
2715	2238 586 59812	100nF 20% 50V 0603
2716	2238 586 59812	100nF 20% 50V 0603
2717	4822 126 11663	12pF 5% 50V 0603
2718	4822 122 33752	15pF 5% 50V
2719	4822 122 33752	15pF 5% 50V
2720	4822 122 33752	15pF 5% 50V
2721	2020 552 94427	100pF 5% 50V
2722	2020 552 94427	100pF 5% 50V
2723	2020 552 94427	100pF 5% 50V
2724	2020 552 94427	100pF 5% 50V
2725	4822 126 11663	12pF 5% 50V 0603
2726	4822 126 11669	27pF 5% 50V 0603
2727	4822 126 11663	12pF 5% 50V 0603
2728	2020 021 91554	10µF 20% 16V
2729	2238 586 59812	100nF 20% 50V 0603
2730	2020 021 91557	100µF 20% 16V
2731	4822 126 13879	220nF +80-20% 16V
2732	4822 126 13879	220nF +80-20% 16V
2733	4822 126 13879	220nF +80-20% 16V
2734	4822 126 13879	220nF +80-20% 16V
2735	4822 126 13879	220nF +80-20% 16V
2736	4822 126 11669	27pF 5% 50V 0603
2737	4822 126 11663	12pF 5% 50V 0603
2738	4822 126 11663	12pF 5% 50V 0603
2739	4822 126 11669	27pF 5% 50V 0603
2740	2238 916 15641	22nF 10% 25V 0603
2741	2238 916 15641	22nF 10% 25V 0603
2742	2238 916 15641	22nF 10% 25V 0603
2743	2238 586 59812	100nF 20% 50V 0603
2744	2238 586 59812	100nF 20% 50V 0603
2745	2238 586 59812	100nF 20% 50V 0603
2746	2238 586 59812	100nF 20% 50V 0603
2747	4822 126 13879	220nF +80-20% 16V
2748	2238 586 59812	100nF 20% 50V 0603
2749	2020 021 91554	10µF 20% 16V
2750	2238 586 59812	100nF 20% 50V 0603
2751	2238 586 59812	100nF 20% 50V 0603
2752	2238 586 59812	100nF 20% 50V 0603
2753	2238 586 59812	100nF 20% 50V 0603
2754	4822 126 13879	220nF +80-20% 16V
2755	2238 586 59812	100nF 20% 50V 0603
2756	2238 586 59812	100nF 20% 50V 0603
2757	2238 916 15641	22nF 10% 25V 0603
2760	2238 586 59812	100nF 20% 50V 0603
2761	2238 586 59812	100nF 20% 50V 0603
2762	2238 586 59812	100nF 20% 50V 0603
2763	2238 586 59812	100nF 20% 50V 0603
2764	2238 586 59812	100nF 20% 50V 0603
2765	2238 586 59812	100nF 20% 50V 0603
2766	2238 586 59812	100nF 20% 50V 0603
2767	2238 586 59812	100nF 20% 50V 0603
2768	2238 586 59812	100nF 20% 50V 0603
2769	2238 586 59812	100nF 20% 50V 0603
2770	2020 021 91554	10µF 20% 16V
2771	2238 586 59812	100nF 20% 50V 0603
2772	2020 021 91557	100µF 20% 16V
2773	2238 586 59812	100nF 20% 50V 0603
2774	4822 126 13879	220nF +80-20% 16V
2775	2238 586 59812	100nF 20% 50V 0603
2776	2238 586 59812	100nF 20% 50V 0603
2777	2238 586 59812	100nF 20% 50V 0603
2778	2238 586 59812	100nF 20% 50V 0603
2779	2238 586 59812	100nF 20% 50V 0603
2780	2238 586 59812	100nF 20% 50V 0603
2781	2238 586 59812	100nF 20% 50V 0603
2782	2238 586 59812	100nF 20% 50V 0603
2783	2238 586 59812	100nF 20% 50V 0603
2784	2238 586 59812	100nF 20% 50V 0603
2785	2238 586 59812	100nF 20% 50V 0603
2786	2238 586 59812	100nF 20% 50V 0603
2787	2238 586 59812	100nF 20% 50V 0603
2788	2238 586 59812	100nF 20% 50V 0603
2789	2238 586 59812	100nF 20% 50V 0603
2790	2238 586 59812	100nF 20% 50V 0603
2791	2238 586 59812	100nF 20% 50V 0603
2792	2238 586 59812	100nF 20% 50V 0603
2793	2238 586 59812	100nF 20% 50V 0603
2794	2238 586 59812	100nF 20% 50V 0603
2795	2238 586 59812	100nF 20% 50V 0603
2796	2020 021 91554	10µF 20% 16V
2799	2020 021 91557	100µF 20% 16V
2800	2238 586 59812	100nF 20% 50V 0603
2801	2238 586 59812	100nF 20% 50V 0603
2803	2238 586 59812	100nF 20% 50V 0603
2804	2238 586 59812	100nF 20% 50V 0603
2805	2238 586 59812	100nF 20% 50V 0603
2806	2020 021 91557	100µF 20% 16V
2807	2238 586 59812	100nF 20% 50V 0603
2808	2020 021 91554	10µF 20% 16V
2809	2238 586 59812	100nF 20% 50V 0603
2810	2238 586 59812	100nF 20% 50V 0603
2811	2238 586 59812	100nF 20% 50V 0603
2812	2238 586 59812	100nF 20% 50V 0603
2813	2238 586 59812	100nF 20% 50V 0603
2814	2238 586 59812	100nF 20% 50V 0603
2815	4822 126 14223	2.2pF 10% 50V 0603
2816	4822 126 14223	2.2pF 10% 50V 0603
2817	2238 586 59812	100nF 20% 50V 0603
2818	4822 126 14223	2.2pF 10% 50V 0603
2820	2238 586 59812	100nF 20% 50V 0603
2821	2238 586 59812	100nF 20% 50V 0603
2822	2238 586 59812	100nF 20% 50V 0603
2823	5322 126 11578	1nF 10% 50V 0603
2824	5322 126 11578	1nF 10% 50V 0603
2825	2238 586 59812	100nF 20% 50V 0603
2826	2238 586 59812	100nF 20% 50V 0603
2827	2238 586 59812	100nF 20% 50V 0603
2828	2238 586 59812	100nF 20% 50V 0603
2829	2238 586 59812	100nF 20% 50V 0603
2830	2238 586 59812	100nF 20% 50V 0603
2832	2238 586 59812	100nF 20% 50V 0603
2833	2238 586 59812	100nF 20% 50V 0603
2835	2238 586 59812	100nF 20% 50V 0603
2838	2238 586 59812	100nF 20% 50V 0603
2843	2238 586 59812	100nF 20% 50V 0603
2845	2238 586 59812	100nF 20% 50V 0603
2846	2238 586 59812	100nF 20% 50V 0603
2847	2238 586 59812	100nF 20% 50V 0603
2848	2238 586 59812	100nF 20% 50V 0603
2851	2238 586 59812	100nF 20% 50V 0603
2853	4822 126 13879	220nF +80-20% 16V
2854	4822 126 13879	220nF +80-20% 16V
2855	2238 586 59812	100nF 20% 50V 0603
2857	2238 586 59812	100nF 20% 50V 0603
2859	4822 126 13879	220nF +80-20% 16V
2860	2238 586 59812	100nF 20% 50V 0603
2861	4822 126 13879	220nF +80-20% 16V
2864	2238 586 59812	100nF 20% 50V 0603
2865	2238 586 59812	100nF 20% 50V 0603
2866	4822 126 13879	220nF +80-20% 16V
2867	4822 126 13879	220nF +80-20% 16V
2870	2020 021 91554	10µF 20% 16V
2871	2020 021 91554	10µF 20% 16V
2872	2238 586 59812	100nF 20% 50V 0603
2874	2020 021 91554	10µF 20% 16V
2875	2020 021 91554	10µF 20% 16V
2876	2238 586 59812	100nF 20% 50V 0603
2879	2238 586 59812	100nF 20% 50V 0603
2880	2020 021 91557	100µF 20% 16V
2881	4822 126 11669	27pF 5% 50V 0603
2884	4822 126 13879	220nF +80-20% 16V
2885	4822 126 11663	12pF 5% 50V 0603
2886	2238 586 59812	100nF 20% 50V 0603
2887	2238 586 59812	100nF 20% 50V 0603
2888	2238 586 59812	100nF 20% 50V 0603
2889	2238 586 59812	100nF 20% 50V 0603
2890	2238 586 59812	100nF 20% 50V 0603
2891	2238 586 59812	100nF 20% 50V 0603
2892	2238 586 59812	100nF 20% 50V 0603
2893	2238 586 59812	100nF 20% 50V 0603
2894	2238 586 59812	100nF 20% 50V 0603
2895	2238 586 59812	100nF 20% 50V 0603
2896	2238 586 59812	100nF 20% 50V 0603
2897	2238 586 59812	100nF 20% 50V 0603
2898	2238 586 59812	100nF 20% 50V 0603
2899	2238 586 59812	100nF 20% 50V 0603
2908	2238 586 59812	100nF 20% 50V 0603
2909	2238 586 59812	100nF 20% 50V 0603
2910	2238 586 59812	100nF 20% 50V 0603
2911	2238 586 59812	100nF 20% 50V 0603
2912	3198 017 44740	470nF 10V 0603

3001	4822 051 30472	4.7Ω 5% 0.062W
3002	4822 051 30472	4.7Ω 5% 0.062W
3003	4822 117 13525	24kΩ 1% 0.62W 0603
3005	4822 051 30103	10kΩ 5% 0.062W
3006	4822 051 30471	47Ω 5% 0.062W
3007	3198 031 14710	4 x 470Ω 5% 1206
3008	4822 117 13526	150Ω 5% 0.63W
3009	2322 702 60829	82Ω 5% 0603
3011	4822 051 30471	47Ω 5% 0.062W
3012	3198 031 11010	4 x 100Ω 5% 1206
3013	4822 051 30103	10kΩ 5% 0.062W
3014	4822 051 30682	6.8Ω 5% 0.062W
3015	4822 051 30474	470kΩ 5% 0.062W
3016	4822 051 30152	1.5Ω 5% 0.062W
3017	4822 051 30472	4.7Ω 5% 0.062W
3018	4822 051 30103	10kΩ 5% 0.062W
3019	4822 051 30472	4.7Ω 5% 0.062W
3020	4822 051 30103	10kΩ 5% 0.062W
3021	4822 051 30103	10kΩ 5% 0.062W
3024	4822 051 30273	27kΩ 5% 0.062W
3025	4822 051 30221	220Ω 5% 0.062W
3026	4822 051 30472	4.7Ω 5% 0.062W
3027	4822 117 12925	47kΩ 1% 0.063W 0603
3029	4822 051 30103	10kΩ 5% 0.062W
3031	4822 051 30103	10kΩ 5% 0.062W
3033	4822 051 30103	10kΩ 5% 0.062W
3034	3198 031 11010	4 x 100Ω 5% 1206
3035	3198 031 11010	4 x 100Ω 5% 1206
3039	4822 051 30181	180Ω 5% 0.062W
3040	4822 051 30472	4.7Ω 5% 0.062W
3041	4822 051 30472	4.7Ω 5% 0.062W
3042	4822 051 30472	4.7Ω 5% 0.062W
3044	4822 051 30272	2.7kΩ 5% 0.062W
3048	3198 031 11010	4 x 100Ω 5% 1206
3049	3198 031 11010	4 x 100Ω 5% 1206
3050	3198 031 11010	4 x 100Ω 5% 1206
3051	3198 031 11010	4 x 100Ω 5% 1206
3052	3198 031 11010	4 x 100Ω 5% 1206
3053	4822 051 30101	100Ω 5% 0.062W
3054	3198 031 11010	4 x 100Ω 5% 1206
3055	3198 031 11010	4 x 100Ω 5% 1206
3056	3198 031 11010	4 x 100Ω 5% 1206
3057	3198 031 11010	4 x 100Ω 5% 1206
3059	2322 704 66201	620Ω 1% 0603
3061	4822 051 30103	10kΩ 5% 0.062W
3062	4822 051 30103	10kΩ 5% 0.062W
3064	3198 031 11010	4 x 100Ω 5% 1206
3065	4822 051 30472	4.7Ω 5% 0.062W
3066	4822 117 12925	47kΩ 1% 0.063W 0603
3067	4822 051 30474	470kΩ 5% 0.062W
3068	4822 051 30272	2.7kΩ 5% 0.062W
3069	4822 051 30272	2.7kΩ 5% 0.062W
3073	3198 031 14710	4 x 470Ω 5% 1206
3074	3198 031 14710	4 x 470Ω 5% 1206
3076	3198 031 14710	4 x 470Ω 5% 1206
3078	3198 031 14710	4 x 470Ω 5% 1206
3079	4822 051 30472	4.7Ω 5% 0.062W
3080	4822 051 30472	4.7Ω 5% 0.062W
3081	4822 051 30008	Jumper 0603
3088	4822 051 30472	4.7Ω 5% 0.062W
3090	3198 031 14710	4 x 470Ω 5% 1206
3093	4822 051 30103	10kΩ 5% 0.062W
3094	4822 117 12925	47kΩ 1% 0.063W 0603
3095	4822 117 12925	47kΩ 1% 0.063W 0603
3096	4822 117 12925	47kΩ 1% 0.063W 0603
3097	4822 051 30008	Jumper 0603
3099	3198 031 14710	4 x 470Ω 5% 1206
3301	4822 117 13632	100kΩ 1% 0603 0.62W
3302	4822 051 30102	1kΩ 5% 0.062W
3303	4822 117 13632	100kΩ 1% 0603 0.62W
3304⚠	2322 750 63908	3.9Ω 5% Fuse 1206
3306	4822 051 30221	220Ω 5% 0.062W
3307	4822 051 30183	18kΩ 5% 0.062W
3308	4822 051 20154	150kΩ 5% 0.1W
3310	4822 051 30563	56kΩ 5% 0.062W
3311	4822 117 13632	100kΩ 1% 0603 0.62W
3312	4822 117 13632	100kΩ 1% 0603 0.62W
3313	4822 117 13632	100kΩ 1% 0603 0.62W
3314	4822 051 30103	10kΩ 5% 0.062W
3315	4822 051 30102	1kΩ 5% 0.062W
3316	4822 117 10834	47kΩ 1% 0.1W
3317	4822 051 30221	220Ω 5% 0.062W
3318	4822 051 30102	1kΩ 5% 0.062W
3319	4822 051 30221	220Ω 5% 0.062W
3320	4822 051 30101	100Ω 5% 0.062W
3321	4822 051 30101	100Ω 5% 0.062W
3322	4822 051 10102	1kΩ 2% 0.25W
3324	4822 051 30472	4.7Ω 5% 0.062W
3327	4822 117 13632	100kΩ 1% 0603 0.62W
3328	4822 051 30393	39kΩ 5% 0.062W
3329⚠	4822 117 13568	6.8Ω 5% 1206
3331	4822 051 30102	1kΩ 5% 0.062W
3333	4822 051 30102	1kΩ 5% 0.062W
3334	4822 051 30102	1kΩ 5% 0.062W
3336	4822 051 30102	1kΩ 5% 0.062W
3338	4822 051 30008	Jumper 0603
3340	4822 051 30101	100Ω 5% 0.062W
3341	4822 051 30101	100Ω 5% 0.062W
3342	4822 051 30101	100Ω 5% 0.062W
3343	4822 051 20683	68kΩ 5% 0.1W
3344	4822 051 30222	2.2kΩ 5% 0.062W
3345	4822 051 30103	10kΩ 5% 0.062W
3346	4822 051 30333	33kΩ 5% 0.062W
3347	4822 051 30223	22kΩ 5% 0.062W
3348	4822 051 30222	2.2kΩ 5% 0.062W
3349	4822 051 30472	4.7Ω 5% 0.062W
3357	4822 051 30008	Jumper 0603
3362	4822 051 30684	680kΩ 5% 0.062W
3363	4822 051 30102	1kΩ 5% 0.062W
3364	4822 051 30103	10kΩ 5% 0.062W
3365	4822 051 30103	10kΩ 5% 0.062W
3366	4822 051 30221	220Ω 5% 0.062W
3367	4822 051 30221	220Ω 5% 0.062W
3368	3198 021 32250	2.2MΩ 5% 0603
3370	4822 051 30101	100Ω 5% 0.062W
3371	4822 051 30479	47Ω 5% 0.062W
3372	4822 051 30471	47Ω 5% 0.062W
3373	4822 051 30008	Jumper 0603
3374	4822 051 30008	Jumper 0603
3375	4822 051 30008	Jumper 0603
3376	4822 051 30101	100Ω 5% 0.062W
3377	4822 051 30101	100Ω 5% 0.062W
3378	4822 051 30153	15kΩ 5% 0.062W
3379	4822 051 30008	Jumper 0603
3379	4822 051 30101	100Ω 5% 0.062W
3380	4822 051 30101	100Ω 5% 0.062W
3382	4822 051 30561	560Ω 5% 0.062W
3384	4822 051 30008	Jumper 0603
3385	4822 051 30471	47Ω 5% 0.062W
3386	4822 051 30223	22kΩ 5% 0.062W
3390	4822 051 30221	220Ω 5% 0.062W
3391	4822 051 30472	4.7Ω 5% 0.062W
3393	4822 117 13632	100kΩ 1% 0603 0.62W
3394	4822 051 30472	4.7Ω 5% 0.062W
3400⚠	4822 117 11152	4.7Ω 5%
3402⚠	2322 750 63908	3.9Ω 5% Fuse 1206
3403	4822 051 30101	100Ω 5% 0.062W
3404	4822 051 30561	560Ω 5% 0.062W
3405	4822 051 30102	1kΩ 5% 0.062W
3406	2322 702 60279	27Ω 5% 0.1W 0603
3408	4822 051 30101	100Ω 5% 0.062W
3411	4822 051 30272	2.7kΩ 5% 0.062W
3412	4822 051 30102	1kΩ 5% 0.062W
3414	4822 051 30472	4.7Ω 5% 0.062W
3415	4822 051 30222	2.2kΩ 5% 0.062W
3418	4822 051 30391	390Ω 5% 0.062W
3419	4822 051 30339	33Ω 5% 0.062W
3435	4822 051 30472	4.7Ω 5% 0.062W
3436	4822 051 30221	220Ω 5% 0.062W
3437	4822 051 30471	47Ω 5% 0.062W
3439	4822 051 30471	47Ω 5% 0.062W
3441	4822 051 30562	5.6kΩ 5% 0.063W 0603
3445	4822 051 30271	270Ω 5% 0.062W
3446	4822 051 30101	100Ω 5% 0.062W
3463	4822 051 30472	4.7Ω 5% 0.062W
3468	4822 117 13632	100kΩ 1% 0603 0.62W
3472	4822 051 30223	22kΩ 5% 0.062W
3500	4822 051 30153	15kΩ 5% 0.062W
3501	2422 549 43769	Bead 30Ω at 100MHz
3504	4822 051 30123	12kΩ 5% 0.1W
3505	4822 051 30153	15kΩ 5% 0.062W
3506	2422 549 43769	Bead 30Ω at 100MHz
3509	4822 051 30123	12kΩ 5% 0.1W
3510	4822 117 12925	47kΩ 1% 0.063W 0603
3511	4822 117 13632	100kΩ 1% 0603 0.62W
3512	4822 051 30154	150kΩ 5% 0.062W
3513	4822 117 12889	270kΩ 1% 0.063W 0603
3514	4822 117 12925	47kΩ 1% 0.063W 0603
3515	4822 117 13632	100kΩ 1% 0603 0.62W
3516	4822 051 30392	3.9Ω 5% 0.063W 0603
3519	4822 051 30103	10kΩ 5% 0.062W
3521	4822 117 13632	100kΩ 1% 0603 0.62W
3522	4822 117 13632	100kΩ 1% 0603 0.62W
3523	4822 117 13632	100kΩ 1% 0603 0.62W
3524	4822 117 13632	100kΩ 1% 0603 0.62W
3525	4822 051 30684	680kΩ 5% 0.062W
3526	4822 051 30105	1MΩ 5% 0.062W
3527	4822 051 30101	100Ω 5% 0.062W
3529	4822 051 30103	10kΩ 5% 0.062W
3530	4822 051 30103	10kΩ 5% 0.062W
3531	5322 117 13056	8.2kΩ 1% 0.063W 0603
3532	4822 051 30102	1kΩ 5% 0.062W
3533	4822 051 30103	10kΩ 5% 0.062W
3540	4822 051 30103	10kΩ 5% 0.062W
3546	4822 051 30102	1kΩ 5% 0.062W
3552	4822 051 30103	10kΩ 5% 0.062W
3558	4822 051 30101	100Ω 5% 0.062W
3559	4822 051 30101	100Ω 5% 0.062W
3560	4822 051 30101	100Ω 5% 0.062W
3561	4822 051 30101	100Ω 5% 0.062W
3562	4822 051 30101	100Ω 5% 0.062W
3563	4822 051 30101	100Ω 5% 0.062W
3564	4822 051 30101	100Ω 5% 0.062W
3567	4822 051 30101	100Ω 5% 0.062W
3568	4822 051 30101	100Ω 5% 0.062W
3569	4822 051 30101	100Ω 5% 0.062W
3570	4822 051 30101	100Ω 5% 0.062W
3571	4822 051 30101	100Ω 5% 0.062W
3572	4822 051 30101	100Ω 5% 0.062W
3573	4822 051 30101	100Ω 5% 0.062W
3574	4822 051 30101	100Ω 5% 0.062W
3575	4822 051 30101	100Ω 5% 0.062W
3576	4822 051 30272	2.7kΩ 5% 0.062W
3578	4822 051 30103	10kΩ 5% 0.062W
3579	4822 051 30103	10kΩ 5% 0.062W
3612	4822 117 12925	47kΩ 1% 0.063W 0603
3613	4822 117 12925	47kΩ 1% 0.063W 0603
3614	4822 117 12925	47kΩ 1% 0.063W 0603
3615	4822 117 12925	47kΩ 1% 0.063W 0603
3616	4822 051 30272	2.7kΩ 5% 0.062W
3636	4822 051 30271	270Ω 5% 0.062W
3637	4822 117 12864	82kΩ 5% 0.6W
3640	4822 051 30101	100Ω 5% 0.062W
3641	4822 051 30101	100Ω 5% 0.062W
3642	4822 051 30101	100Ω 5% 0.062W
3643	4822 051 30101	100Ω 5% 0.062W
3644⚠	4822 117 11152	4.7Ω 5%
3653	4822 051 30008	Jumper 0603
3654	4822 051 30008	Jumper 0603
3655	4822 051 30101	100Ω 5% 0.062W
3656	4822 051 30101	100Ω 5% 0.062W
3657	4822 051 30563	56kΩ 5% 0.062W
3658	4822 051 30154	150kΩ 5% 0.062W
3666	4822 051 30154	150kΩ 5% 0.062W
3667	4822 117 12864	82kΩ 5% 0.6W
3668	4822 051 30563	56kΩ 5% 0.062W
3669	4822 051 30271	270Ω 5% 0.062W
3670	4822 051 30102	1kΩ 5% 0.062W
3671	4822 117 11817	1.2kΩ 1% 0.0625W
3673	4822 051 30103	10kΩ 5% 0.062W
3683	4822 051 30223	22kΩ 5% 0.062W
3684	4822 051 30008	Jumper 0603
3685	4822 051 30008	Jumper 0603
3688	4822 051 30008	Jumper 0603
3689	4822 051 30008	Jumper 0603
3692	4822 051 30008	Jumper 0603
3693	4822 051 30008	Jumper 0603
3698	4822 117 11817	1.2kΩ 1% 0.0625W
3701	4822 051 30689	68Ω 5% 0.063W 0603
3703	5322 117 13047	330Ω 1% 0.063W 0603
3704	5322 117 13047	330Ω 1% 0.063W 0603
3705	5322 117 13047	330Ω 1% 0.063W 0603
3709	4822 051 30101	100Ω 5% 0.062W
3710	4822 051 30101	100Ω 5% 0.062W
3711	4822 117 12925	47kΩ 1% 0.063W 0603
3712	4822 117 12925	47kΩ 1% 0.063W 0603
3713	4822 051 30181	180Ω 5% 0.062W
3714	4822 051 30181	180Ω 5% 0.062W
3715	4822 051 30181	180Ω 5% 0.062W
3716	4822 117 13632	100kΩ 1% 0603 0.62W
3717	4822 117 13632	100kΩ 1% 0603 0.62W
3718	4822 117 13632	100kΩ 1% 0603 0.62W
3721	4822 117 12917	1Ω 5% 0.062W
3725	4822 051 30332	3.3Ω 5% 0.062W
3726	4822 117 11817	1.2kΩ 1% 0.0625W
3727	4822 051 30151	150Ω 5% 0.062W
3728	4822 051 30151	150Ω 5% 0.062W
3729	4822 051 30689	68Ω 5% 0.063W 0603
3730	4822 051 30681	680Ω 5% 0.062W
3731	4822 051 30472	4.7Ω 5% 0.062W
3732	4822 051 30102	1kΩ 5% 0.062W
3733	4822 051 30472	4.7Ω 5% 0.062W
3735	4822 051 30008	Jumper 0603
3736	4822 051 30101	100Ω 5% 0.062W
3737	4822 051 30102	1kΩ 5% 0.062W
3738	4822 051 30102	1kΩ 5% 0.062W
3739	4822 051 30123	12kΩ 5% 0.1W
3742	4822 051 30223	22kΩ 5% 0.062W
3743	4822 051 30183	18kΩ 5% 0.062W
3744	4822 051 30222	2.2kΩ 5% 0.062W
3745	4822 051 30102	1kΩ 5% 0.062W
3746	5322 117 13042	3.9kΩ 1% 0.063W 0603
3747	4822 051 30154	150kΩ 5% 0.062W
3748	4822 117 12891	220kΩ 1%
3749	5322 117 13042	3.9kΩ 1% 0.063W 0603
3750	5322 117 13042	3.9kΩ 1% 0.063W 0603
3751	4822 051 30472	4.7Ω 5% 0.062W
3752	4822 051 30008	Jumper 0603

3753	4822 051 30008	Jumper 0603
3754	4822 051 30101	100Ω 5% 0.062W
3755	4822 051 30472	4.7Ω 5% 0.062W
3756	4822 051 30103	10kΩ 5% 0.062W
3757	4822 051 30479	47Ω 5% 0.062W
3758	4822 051 30472	4.7Ω 5% 0.062W
3759	4822 051 30221	220Ω 5% 0.062W
3762	4822 051 30101	100Ω 5% 0.062W
3763	4822 117 12139	22Ω 5% 0.062W
3763	9965 000 23109	22Ω 5% 0603
3764	4822 051 30109	10Ω 5% 0.062W
3771	4822 051 30121	120Ω 5% 0.062W
3772	4822 051 30101	100Ω 5% 0.062W
3773	4822 117 12925	47kΩ 1% 0.063W 0603
3774	4822 117 12925	47kΩ 1% 0.063W 0603
3775	4822 117 12925	47kΩ 1% 0.063W 0603
3776	4822 117 12925	47kΩ 1% 0.063W 0603
3777	4822 117 12925	47kΩ 1% 0.063W 0603
3778	4822 051 30102	1kΩ 5% 0.062W
3779	4822 051 30102	1kΩ 5% 0.062W
3780	4822 051 30102	1kΩ 5% 0.062W
3781	4822 051 30102	1kΩ 5% 0.062W
3782	4822 051 30102	1kΩ 5% 0.062W
3783	4822 051 30102	1kΩ 5% 0.062W
3784	4822 051 30102	1kΩ 5% 0.062W
3785	4822 117 13577	330Ω 1% 1.25W 0805
3786	4822 117 13577	330Ω 1% 1.25W 0805
3787	4822 117 13577	330Ω 1% 1.25W 0805
3788	5322 117 13036	1.2kΩ 1% 0.063W 0603
3789	2322 704 61501	150Ω 1% 0603
3790	2322 704 65601	560Ω 1% 0.063W 0603
3791	5322 117 13049	470Ω 1% 0.063W 0603
3792	4822 051 30102	1kΩ 5% 0.062W
3793	4822 051 30222	2.2kΩ 5% 0.062W
3794	4822 051 30109	10Ω 5% 0.062W
3795	4822 051 30689	68Ω 5% 0.063W 0603
3796	4822 117 12925	47kΩ 1% 0.063W 0603
3797	4822 051 30472	4.7Ω 5% 0.062W
3800	2322 704 61501	150Ω 1% 0603
3801	4822 051 30102	1kΩ 5% 0.062W
3802	2322 704 61501	150Ω 1% 0603
3803	2322 704 61501	150Ω 1% 0603
3804	4822 051 30102	1kΩ 5% 0.062W
3805	5322 117 13049	470Ω 1% 0.063W 0603
3806	5322 117 13049	470Ω 1% 0.063W 0603
3807	2322 704 62701	270Ω 1% 0603
3807	5322 117 13045	270Ω 1% 0.063W 0603
3808	5322 117 13057	820Ω 1% 0.063W 0603
3809	2322 704 61801	180Ω 1% 0.063W 0603
3810	4822 051 30391	390Ω 5% 0.062W
3811	4822 051 30759	75Ω 5% 0.062W
3812	4822 051 30759	75Ω 5% 0.062W
3813	4822 051 30391	390Ω 5% 0.062W
3814	4822 051 30759	75Ω 5% 0.062W
3815	4822 051 30759	75Ω 5% 0.062W
3816	4822 051 30391	390Ω 5% 0.062W
3817	4822 051 30759	75Ω 5% 0.062W
3818	4822 051 30759	75Ω 5% 0.062W
3819	4822 051 30759	75Ω 5% 0.062W
3820	4822 051 30759	75Ω 5% 0.062W
3821	4822 051 30759	75Ω 5% 0.062W
3822	4822 051 30759	75Ω 5% 0.062W
3823	4822 051 30759	75Ω 5% 0.062W
3824	4822 051 30759	75Ω 5% 0.062W
3825	2322 704 61501	150Ω 1% 0603
3826	2322 704 61501	150Ω 1% 0603
3827	2322 704 61501	150Ω 1% 0603
9015	4822 051 30008	Jumper 0603
9302	4822 051 30008	Jumper 0603
9303	4822 051 30008	Jumper 0603
9304	4822 051 30008	Jumper 0603
9314	4822 051 30008	Jumper 0603
9315	4822 051 30008	Jumper 0603
9316	4822 051 30008	Jumper 0603
9318	4822 051 30008	Jumper 0603
9322	4822 051 30008	Jumper 0603
9406	4822 051 30008	Jumper 0603
9410	4822 051 30008	Jumper 0603
9413	4822 051 30008	Jumper 0603
9416	4822 051 30008	Jumper 0603
9417	4822 051 30008	Jumper 0603
9418	4822 051 30008	Jumper 0603
9419	4822 051 30008	Jumper 0603
9420	4822 051 30008	Jumper 0603
9520	4822 051 30008	Jumper 0603
9522	4822 051 30008	Jumper 0603
9603	4822 051 30008	Jumper 0603
9604	4822 051 30008	Jumper 0603
9607	4822 051 30008	Jumper 0603
9608	4822 051 30008	Jumper 0603
9609	4822 051 30008	Jumper 0603
9610	4822 051 30008	Jumper 0603
9642	4822 051 30008	Jumper 0603
9645	4822 051 30008	Jumper 0603
9688	4822 051 30008	Jumper 0603
9689	4822 051 30008	Jumper 0603
9691	4822 051 30008	Jumper 0603
9692	4822 051 30008	Jumper 0603
9694	4822 051 30008	Jumper 0603
9702	4822 051 30008	Jumper 0603
9704	4822 051 30008	Jumper 0603
9725	4822 051 30008	Jumper 0603
9731	4822 051 30008	Jumper 0603
9733	4822 051 30008	Jumper 0603
9735	4822 051 30008	Jumper 0603
9736	4822 051 30008	Jumper 0603
9737	4822 051 30008	Jumper 0603
9738	4822 051 30008	Jumper 0603
9740	4822 051 30008	Jumper 0603
9741	2350 035 10689	4 x 68Ω 5%
9744	4822 051 30008	Jumper 0603
9747	4822 051 30008	Jumper 0603
9754	4822 051 30008	Jumper 0603
9760	4822 051 30008	Jumper 0603
9761	4822 051 30008	Jumper 0603
9762	4822 051 30008	Jumper 0603
9763	4822 051 30008	Jumper 0603
9764	4822 051 30008	Jumper 0603
9765	4822 051 30008	Jumper 0603
9769	4822 051 30008	Jumper 0603
9770	4822 051 30008	Jumper 0603
9771	4822 051 30008	Jumper 0603
9901	4822 051 30008	Jumper 0603
9902	4822 051 30008	Jumper 0603
9903	4822 051 30008	Jumper 0603
9904	4822 051 30008	Jumper 0603
9905	4822 051 30008	Jumper 0603
9906	4822 051 30008	Jumper 0603
9907	4822 051 30008	Jumper 0603
9908	4822 051 30008	Jumper 0603
9909	4822 051 30008	Jumper 0603
9919	4822 051 30008	Jumper 0603
9920	4822 051 30008	Jumper 0603
9921	4822 051 30008	Jumper 0603
9925	4822 051 30008	Jumper 0603
9927	4822 051 30008	Jumper 0603
9928	4822 051 30008	Jumper 0603
9929	4822 051 30008	Jumper 0603
9935	4822 051 30008	Jumper 0603
9937	4822 051 30008	Jumper 0603
9938	4822 051 30008	Jumper 0603
9939	4822 051 30008	Jumper 0603
9941	4822 051 30759	75Ω 5% 0.062W
9942	4822 051 30759	75Ω 5% 0.062W
9944	4822 051 30008	Jumper 0603
9945	4822 051 30008	Jumper 0603
9946	4822 051 30008	Jumper 0603
9947	4822 051 30008	Jumper 0603
9948	4822 051 30008	Jumper 0603
9949	4822 051 30008	Jumper 0603
9950	4822 051 30008	Jumper 0603
9951	4822 051 30008	Jumper 0603
9952	4822 051 30008	Jumper 0603
9953	4822 051 30008	Jumper 0603
9954	4822 051 30008	Jumper 0603

5301	4822 157 11876	6.8µH 10% 0805
5302	4822 157 11876	6.8µH 10% 0805
5401	3198 018 56880	6.8µH 10% 0603
5403	2422 549 00195	Bead 40.4MHz
5403	2422 549 44461	Trimmer 40MHz 5CCE
5404	2422 535 95427	Bead 120Ω at 100MHz
5405	2422 535 95427	Bead 120Ω at 100MHz
5406	4822 157 10586	2.2µH 10% 0805
5408	2422 549 44983	Trimmer 78MHz 5CCB
5409	2422 549 42896	Bead 120Ω 100MHz
5411	3198 018 32770	0.27µH 10% 0805
5415	4822 157 11716	Bead 30Ω at 100MHz
5416	4822 157 11716	Bead 30Ω at 100MHz
5651	2422 549 43769	Bead 30Ω at 100MHz
5652	2422 549 43769	Bead 30Ω at 100MHz
5653	2422 549 43769	Bead 30Ω at 100MHz
5654	4822 157 11716	Bead 30Ω at 100MHz
5655	4822 157 11828	22µH 20% 0805
5656	4822 157 11876	6.8µH 10% 0805
5663	4822 051 30008	Jumper 0603
5671	4822 157 11716	Bead 30Ω at 100MHz
5672	4822 157 11716	Bead 30Ω at 100MHz
5700	3198 018 31580	1.5µH 10% 0805
5701	3198 018 31080	1µF 10% 0805
5701	4822 157 71304	1µH 10% 0805
5702	3198 018 31080	1µF 10% 0805
5702	4822 157 71304	1µH 10% 0805
5705	4822 156 21729	Bead 1kΩ 100MHz 0805
5706	4822 157 11716	Bead 30Ω at 100MHz
5707	4822 157 11716	Bead 30Ω at 100MHz
5710	4822 156 21729	Bead 1kΩ 100MHz 0805
5711	4822 156 21729	Bead 1kΩ 100MHz 0805
5712	4822 156 21729	Bead 1kΩ 100MHz 0805
5713	4822 157 11716	Bead 30Ω at 100MHz
5714	4822 157 11716	Bead 30Ω at 100MHz
5716	4822 157 11716	Bead 30Ω at 100MHz
5722	4822 156 21729	Bead 1kΩ 100MHz 0805
5723	4822 157 11716	Bead 30Ω at 100MHz
5724	4822 156 21729	Bead 1kΩ 100MHz 0805
5725	4822 157 71206	Bead 600Ω 100MHz
5726	4822 156 21729	Bead 1kΩ 100MHz 0805
5727	4822 156 21729	Bead 1kΩ 100MHz 0805
5728	4822 157 11716	Bead 30Ω at 100MHz
5729	4822 157 11716	Bead 30Ω at 100MHz
5731	4822 157 11716	Bead 30Ω at 100MHz
5736	4822 157 11876	6.8µH 10% 0805
5737	4822 157 11716	Bead 30Ω at 100MHz
5738	4822 157 11716	Bead 30Ω at 100MHz
5739	4822 157 10586	2.2µH 10% 0805
5740	4822 157 10586	2.2µH 10% 0805
5741	4822 157 10586	2.2µH 10% 0805
5742	4822 157 11716	Bead 30Ω at 100MHz
5743	4822 156 21729	Bead 1kΩ 100MHz 0805
5744	4822 157 11716	Bead 30Ω at 100MHz
5750	4822 157 11716	Bead 30Ω at 100MHz
5751	4822 157 11716	Bead 30Ω at 100MHz
5900	4822 157 11716	Bead 30Ω at 100MHz
5901	4822 157 11716	Bead 30Ω at 100MHz
5902	4822 157 11716	Bead 30Ω at 100MHz
5903	4822 157 11716	Bead 30Ω at 100MHz
5904	4822 157 11716	Bead 30Ω at 100MHz
5910	2422 549 43062	Bead 600Ω at 100MHz
5911	2422 549 43062	Bead 600Ω at 100MHz
5912	2422 549 43062	Bead 600Ω at 100MHz
5913	2422 549 43062	Bead 600Ω at 100MHz
5914	2422 549 43062	Bead 600Ω at 100MHz
5915	2422 549 43062	Bead 600Ω at 100MHz
5917	2422 549 43062	Bead 600Ω at 100MHz
5918	2422 549 43062	Bead 600Ω at 100MHz
5919	2422 549 43062	Bead 600Ω at 100MHz
5920	2422 549 43062	Bead 600Ω at 100MHz

6001	4822 130 80622	BAT54
6002	4822 130 11397	BAS316
6003	4822 130 80622	BAT54
6004	4822 130 80622	BAT54
6005	4822 130 11422	PLVA2650A
6303	9322 150 18685	BZX384-C47
6304	4822 130 11397	BAS316
6306	3198 020 55680	BZX384-C5V6
6307	4822 130 80622	BAT54
6309	4822 130 11397	BAS316
6310	4822 130 11416	PDZ6.8B
6311	9340 548 67115	PDZ22B
6312	4822 130 11397	BAS316
6313	9340 548 67115	PDZ22B
6314	4822 130 11397	BAS316
6317	4822 130 11397	BAS316
6319	4822 130 11397	BAS316
6334	4822 130 11397	BAS316
6403	9340 552 30115	BA591
6652	4822 130 11551	UDZS10B
6657	4822 130 10838	UDZ3.3B
6658	4822 130 11397	BAS316
6926	4822 130 11397	BAS316
6927	4822 130 11397	BAS316
6928	4822 130 11397	BAS316
6929	4822 130 11397	BAS316
6956	4822 130 11397	BAS316
6957	4822 130 11397	BAS316

7001	9352 684 81557	SAA5801H/015
7002	3198 010 42320	BC857BW
7003	3198 010 42310	BC847BW
7004	3198 010 42310	BC847BW
7005	9322 116 74668	LD1117D33
7006		For SW see item 7098
7007	9322 200 55668	IS41LV16100-50K
7008	3198 010 42310	BC847BW
7009	3198 010 42310	BC847BW
7010	3198 010 42320	BC857BW
7011	9322 156 81668	M24C32-WMN6TNKSA
7013	3198 010 42310	BC847BW
7014	3198 010 42320	BC857BW
7015	4822 209 73852	PMBT2369
7016	4822 209 73852	PMBT2369
7098	3104 317 06851	SW (check Prod.Surv.)

7301	9352 681 65518	TDA9330N3
7303	3198 010 42320	BC857BW
7304	9340 310 30215	PDTC144ET
7307	9352 630 99118	TDA9181T
7310	3198 010 42310	BC847BW
7311	3198 010 42320	BC857BW
7312	9340 310 30215	PDTC144ET
7318	3198 010 42320	BC857BW
7320	3198 010 42310	BC847BW
7322	3198 010 42310	BC847BW
7323	9352 625 24518	TDA9321H/N2
7402	3198 010 42310	BC847BW
7403	5322 130 60159	BC846B
7404	3198 010 42310	BC847BW
7407	4822 130 60373	BC856B
7410	3198 010 42310	BC847BW
7411	5322 130 60159	BC846B
7651	9322 180 61702	MSP3411G-FH-B8-V3
7652	9351 869 40118	74HC4053PW
7664	9340 425 30115	BC847BPN
7665	9340 425 30115	BC847BPN
7668	3198 010 42320	BC857BW
7674	3198 010 42310	BC847BW
7675	9340 425 20115	BC847BS
7678	9340 425 20115	BC847BS
7679	9340 425 20115	BC847BS
7680	3198 010 42310	BC847BW
7681	9322 060 73668	MC33178DR2
7682	5322 130 60159	BC846B
7701	3198 010 70400	74LVC1G14GW
7702	5322 130 60159	BC846B
7703	4822 209 73852	PMBT2369
7706	9322 179 78668	LF18ABDT
7707	5322 130 60159	BC846B
7708	5322 130 60159	BC846B
7709	5322 130 60159	BC846B
7710	5322 130 60159	BC846B
7711		For SW see item 7999
7712	9351 870 00118	74HC573PW
7713	9352 688 09557	SAA4978H/V204
7714	9965 000 02179	MS81V04160-25TB
7720	9322 160 50668	LD1117DT25
7722	9965 000 02179	MS81V04160-25TB
7723	9965 000 02179	MS81V04160-25TB
7724	9322 188 08702	T8F24EF-0002
7725	4822 209 73852	PMBT2369
7726	4822 209 17398	LD1117DT33
7727	9322 170 14668	LF15ABDT
7728	5322 130 42718	BFS20
7729	5322 130 42718	BFS20
7730	5322 130 42718	BFS20
7731	5322 130 42718	BFS20
7732	5322 130 42718	BFS20
7733	5322 130 42718	BFS20
7750	9352 686 75125	74LVC1G79GW
7751	9352 684 56115	74LVC1G04GW
7760	9352 730 86557	SAA4998H/V1
7999	3104 317 05311	SW (check Prod.Surv.)

Side I/O Panel FL13B [D]

Various

1326	4822 267 10975	Soc. Cinch f YeWhRd
1327	4822 267 31014	Soc. headphone
1328	2422 026 05133	Connector SVHS 4p f
1936⚠	2422 025 12485	Connector 11p m
1980	4822 267 10565	Connector 4p
1981	4822 267 10735	Connector 3p
8936⚠	3104 311 05271	Cable 11p/820/11p
8981	3104 301 07761	Cable 3p/680/3p

⊣⊢

2803	5322 126 10733	680pF 5% 50V
2804	5322 122 32531	100pF 5% 50V
2805	5322 122 32531	100pF 5% 50V
2806	5322 126 10733	680pF 5% 50V
2807	4822 126 14076	220nF +80/-20% 25V
2813	4822 124 22652	2.2μF 20% 50V
2832	5322 122 31863	330pF 5% 63V 0805
2834	5322 122 31863	330pF 5% 63V 0805
2840	4822 122 33177	10nF 20% 50V
2841	4822 122 33177	10nF 20% 50V

—ʍʍ—

3803	4822 050 11002	1kΩ 1% 0.4W
3804	4822 050 11002	1kΩ 1% 0.4W
3814	4822 117 10833	10kΩ 1% 0.1W
3816	4822 051 20008	Jumper 0805
3826	4822 116 52199	68Ω 5% 0.5W
3827	4822 116 52199	68Ω 5% 0.5W
3828	4822 116 52199	68Ω 5% 0.5W
3829	4822 116 52199	68Ω 5% 0.5W
3830	4822 050 21003	10kΩ 1% 0.6W
3835	4822 116 52175	100Ω 5% 0.5W
3842	4822 050 21003	10kΩ 1% 0.6W
9801	4822 051 20008	Jumper 0805
9803	4822 051 20008	Jumper 0805
9804	4822 051 20008	Jumper 0805
9805	4822 051 20008	Jumper 0805
9806	4822 051 20008	Jumper 0805
9809	4822 051 20008	Jumper 0805

—▶|—

6801	4822 130 11416	PDZ6.8B
6802	4822 130 11416	PDZ6.8B
6803	4822 130 11551	UDZS10B
6804	4822 130 11551	UDZS10B
6805	4822 130 11551	UDZS10B
6806	4822 130 11551	UDZS10B
6807	4822 130 11416	PDZ6.8B
6808	4822 130 11416	PDZ6.8B

Side I/O Panel PV2 [D]

Various

0240⚠	2422 025 12485	Connector 11p m
0306	3139 124 31651	Side I/O bracket
1016	3104 328 31832	Side I/O assy
1254	4822 267 31014	Soc. headphone
1255	4822 265 11606	Connector 3p
1256	2422 026 04926	Soc. Mini-DIN 4p f

⊣⊢

2250	5322 122 32654	22nF 10% 63V 0805
2251	5322 122 32654	22nF 10% 63V 0805
2286	4822 122 33642	150pF 5% 50V
2288	4822 122 33642	150pF 5% 50V
2292	5322 122 32311	470pF 10% 100V
2294	5322 122 32311	470pF 10% 100V
2296	4822 126 13512	330pF 10% 50V
2297	4822 126 13512	330pF 10% 50V

—ʍʍ—

3291	4822 050 11002	1kΩ 1% 0.4W
3292	4822 117 10834	47kΩ 1% 0.1W
3293	4822 050 11002	1kΩ 1% 0.4W
3294	4822 117 10834	47kΩ 1% 0.1W
3295	4822 116 52175	100Ω 5% 0.5W
3296	4822 117 10833	10kΩ 1% 0.1W
3297	4822 117 10833	10kΩ 1% 0.1W
3298	4822 051 30339	33Ω 5% 0.062W
3299	4822 051 30339	33Ω 5% 0.062W
4201	4822 051 20008	Jumper 0805
4241	4822 051 20008	Jumper 0805

—▶|—

6291	9340 548 61115	PDZ12B
6292	9340 548 61115	PDZ12B
6293	9340 548 61115	PDZ12B
6294	9340 548 61115	PDZ12B
6296	9340 548 61115	PDZ12B
6297	9340 548 61115	PDZ12B

Top Control Panel FL13B [E]

Various

0345	4822 267 10567	Connector 4p
1701	4822 276 13775	Switch 1p 0.1A 12V
1702	4822 276 13775	Switch 1p 0.1A 12V
1703	4822 276 13775	Switch 1p 0.1A 12V
1704	4822 276 13775	Switch 1p 0.1A 12V
1705	4822 276 13775	Switch 1p 0.1A 12V
8346	3104 311 06391	Cable 4p/1000/4p

—ʍʍ—

3008	4822 117 10845	620Ω 1% 0.1W
3010	4822 117 11534	1.1kΩ 1% 0.1W
3013	4822 117 13528	200Ω 1% 0.125W 0805
3101	4822 117 11951	2kΩ 1% 0.1W
3104	4822 051 20391	390Ω 5% 0.1W
3999	4822 117 10833	10kΩ 1% 0.1W

Top Control Panel PV2 [E]

Various

0002	3139 188 68771	Top control assy
0135	3104 311 01401	Cable 3P/1500/3P Wh
0215	4822 267 10748	Connector 3p
1091	4822 276 13775	Switch 1p 0.1A 12V
1092	4822 276 13775	Switch 1p 0.1A 12V
1093	4822 276 13775	Switch 1p 0.1A 12V
1094	4822 276 13775	Switch 1p 0.1A 12V
1095	4822 276 13775	Switch 1p 0.1A 12V

⊣⊢

2010	4822 122 33177	10nF 20% 50V

—ʍʍ—

3088	4822 117 11951	2kΩ 1% 0.1W
3089	4822 117 11534	1.1kΩ 1% 0.1W
3090	4822 117 10845	620Ω 1% 0.1W
3091	4822 051 30008	Jumper 0603
3092	4822 051 30008	Jumper 0603
3093	4822 051 30008	Jumper 0603
3094	4822 051 30008	Jumper 0603
3095	4822 051 30391	390Ω 5% 0.062W
3096	4822 117 13528	200Ω 1% 0.125W 0805

CRT Panel [F]

Various

0032	4822 492 70788	Fix IC
1298⚠	2422 500 80063	Connector CRT 10p f
1298⚠	2422 500 80078	Socket CRT 11p f v
1424	2422 025 11244	Connector 7p m
1434	4822 267 10973	Connector 1p
1483	4822 267 10735	Connector 3p
1940⚠	2422 025 12485	Connector 11p m
8483⚠	3104 311 03111	Cable 3p/340/3p ferrite

⊣⊢

2300	2020 012 93596	22μF 20% 250V
2301	4822 124 40196	220μF 20% 16V
2302	4822 126 13956	6.8pF 5% 63V 0603
2304	4822 121 41856	22nF 5% 250V
2306	2238 586 59812	100nF 20% 50V 0603
2307	4822 121 41856	22nF 5% 250V
2309	3198 017 42230	22nF 50V 0603
2313	4822 124 11565	10μF 20% 250V
2315	4822 126 13883	220pF 5% 50V
2316	2222 365 45104	100nF 10% 250V
2318	5322 122 32654	22nF 10% 63V 0805
2319	4822 121 43693	10nF 100V
2320	2238 586 59812	100nF 20% 50V 0603
2324	4822 121 70581	1.5nF 5% 2kV
2324	4822 121 70594	1nF 5% 2kV
2325	2238 586 59812	100nF 20% 50V 0603
2330	4822 157 11499	Bead 60Ω at 100MHz
2332	4822 126 14507	18pF 5% 50V 0603
2333	4822 126 14507	18pF 5% 50V 0603
2334	4822 126 14507	18pF 5% 50V 0603
2409	3198 017 44740	470nF 10V 0603
2410	3198 017 44740	470nF 10V 0603
2411	4822 126 14585	100nF 10% 0805 50V
2412	2222 867 15339	33pF 5% 50V 0603
2420	3198 017 44740	470nF 10V 0603
2422	4822 121 41856	22nF 5% 250V
2423	4822 121 41856	22nF 5% 250V
2425	4822 126 13883	220pF 5% 50V
2426	4822 126 14583	470nF 10% 16V 0805

—ʍʍ—

3300⚠	4822 052 10109	10Ω 5% 0.33W
3301	4822 053 12272	2.7kΩ 5% 3W
3302	4822 051 30102	1kΩ 5% 0.062W
3303	4822 051 30183	18kΩ 5% 0.062W
3304	4822 117 11454	820Ω 1% 0.1W
3306	4822 117 13608	4.7Ω 5% 0603 0.62W
3307	4822 051 30109	10Ω 5% 0.062W
3308	4822 117 10837	100kΩ 1% 0.1W
3310	4822 051 10102	1kΩ 2% 0.25W

3311	4822 051 30569	56Ω 5% 0.062W
3312	4822 051 30222	2.2kΩ 5% 0.062W
3316	4822 117 10837	100kΩ 1% 0.1W
3318	4822 051 30008	Jumper 0603
3319	4822 117 12968	820Ω 5% 0.62W
3323	4822 050 24708	4.7Ω 1% 0.6W
3329	4822 050 24708	4.7Ω 1% 0.6W
3334	4822 050 11002	1kΩ 1% 0.4W
3335	4822 117 12968	820Ω 5% 0.62W
3336	4822 117 12968	820Ω 5% 0.62W
3337	4822 117 12968	820Ω 5% 0.62W
3338	3198 013 01020	1kΩ 20% 0.5W
3339	3198 013 01020	1kΩ 20% 0.5W
3340	3198 013 01020	1kΩ 20% 0.5W
3341⚠	2306 207 03151	150Ω 5% 0.5W
3342	4822 116 83883	470Ω 5% 0.5W
3345	4822 116 52191	33Ω 5% 0.5W
3347	3198 013 01520	1.5kΩ 20% 0.5W
3349	3198 013 01020	1kΩ 20% 0.5W
3350	4822 116 83883	470Ω 5% 0.5W
3351	4822 116 83883	470Ω 5% 0.5W
3352	4822 116 83883	470Ω 5% 0.5W
3354	4822 051 30222	2.2kΩ 5% 0.062W
3355	4822 117 13608	4.7Ω 5% 0603 0.62W
3356	4822 051 10102	1kΩ 2% 0.25W
3357	4822 117 13608	4.7Ω 5% 0603 0.62W
3358	4822 051 30103	10kΩ 5% 0.062W
3359	4822 051 30103	10kΩ 5% 0.062W
3360	4822 051 30103	10kΩ 5% 0.062W
3370⚠	4822 117 13016	VDR 1mA/50V
3401	4822 116 52175	100Ω 5% 0.5W
3403⚠	4822 052 11108	1Ω 5% 0.5W
3405	2122 101 02111	39Ω 5% 0.5W
3410	4822 117 13632	100kΩ 1% 0603 0.62W
3411	4822 117 13632	100kΩ 1% 0603 0.62W
3412⚠	2322 750 61509	15Ω 5% 1206
3413	4822 117 13577	330Ω 1% 1.25W 0805
3414	4822 051 30109	10Ω 5% 0.062W
3416	2122 101 02111	39Ω 5% 0.5W
3417	4822 051 30109	10Ω 5% 0.062W
3418	4822 051 30008	Jumper 0603
3419	4822 053 12272	2.7kΩ 5% 3W
3420	4822 051 30109	10Ω 5% 0.062W
3421	4822 051 20333	33kΩ 5% 0.1W
3422	4822 051 30152	1.5Ω 5% 0.062W
3423	4822 051 20333	33kΩ 5% 0.1W
3424	4822 051 20333	33kΩ 5% 0.1W
3425	4822 051 30152	1.5Ω 5% 0.062W
3426	4822 051 20333	33kΩ 5% 0.1W
3427	4822 051 30109	10Ω 5% 0.062W
3428	4822 117 13632	100kΩ 1% 0603 0.62W
3429	4822 117 13577	330Ω 1% 1.25W 0805
3999	4822 051 30103	10kΩ 5% 0.062W
3999	4822 051 30223	22kΩ 5% 0.062W
3999	4822 051 30333	33kΩ 5% 0.062W
9300	3198 036 90010	Wire 0.58mm
9301	3198 036 90010	Wire 0.58mm
9302	3198 036 90010	Wire 0.58mm
9303	3198 036 90010	Wire 0.58mm
9304	3198 036 90010	Wire 0.58mm
9306	3198 036 90010	Wire 0.58mm
9307	3198 036 90010	Wire 0.58mm
9312	3198 036 90010	Wire 0.58mm
9313	3198 036 90010	Wire 0.58mm
9314	3198 036 90010	Wire 0.58mm
9315	3198 036 90010	Wire 0.58mm
9317	3198 036 90010	Wire 0.58mm
9318	3198 036 90010	Wire 0.58mm
9320	3198 036 90010	Wire 0.58mm
9401	3198 036 90010	Wire 0.58mm
9402	2238 930 11523	10pF 5% 200V 0805
9403	2238 930 11523	10pF 5% 200V 0805
9413	4822 051 20008	Jumper 0805

-∿-

5300⚠	3104 308 20571	Transf. S13974-03
5400	4822 157 11869	33µH 10%

→|-

6300	4822 130 11397	BAS316
6301	4822 051 20479	47kΩ 5% 0.1W
6305	9340 553 52115	BAS321
6306	9340 553 52115	BAS321
6307	9340 553 52115	BAS321
6310	4822 130 11397	BAS316

⊗▭

7300	5322 130 42718	BFS20
7301	5322 130 42718	BFS20
7302	5322 130 62804	BCP53
7303	5322 130 63033	BCP56
7304	4822 130 60383	BF824
7307	9352 561 40112	TDA6108
7308	5322 130 42718	BFS20
7309	5322 130 62804	BCP53
7310	5322 130 63033	BCP56

DC Shift Panel [G]

Various

0317	4822 265 20723	Connector 2p
0318	4822 265 20723	Connector 2p
1430	2422 086 10581	Fuse 400mA 65V
8317	3104 311 01421	Cable 2P3/220/2P3 Wh

⊣⊢

2430	4822 122 31177	470pF 10% 500V
2431	4822 122 31177	470pF 10% 500V

-∿-

5430	3128 138 38911	DC-shift coil CU15

→|-

6432	9340 317 00133	BYD33V
6433	9340 317 00133	BYD33V

I/O 3rd SCART [H]

Various

0043	3104 304 21311	Coverplate SCART
1402	4822 267 10596	Connector 5p
1680	4822 265 31067	Connector 7p m
1992	2422 025 16725	Connector SCART f m Bk

⊣⊢

2500	2020 552 95344	680nF 20-80% 16V 0805
2504	2020 552 94427	100pF 5% 50V
2508	2020 552 95344	680nF 20-80% 16V 0805
2509	2020 552 94427	100pF 5% 50V

-WW-

3501	4822 051 30102	1kΩ 5% 0.062W
3502	4822 051 30008	Jumper 0603
3507	4822 051 30102	1kΩ 5% 0.062W
3508	4822 051 30008	Jumper 0603
3512	4822 051 30008	Jumper 0603
3526	4822 051 30101	100Ω 5% 0.062W
3538	4822 051 30008	Jumper 0603
3540	4822 051 30008	Jumper 0603
3542	4822 051 30008	Jumper 0603
3544	4822 051 30008	Jumper 0603
3999	4822 051 30392	3.9Ω 5% 0.063W 0603
9514	4822 051 30008	Jumper 0603
9515	4822 051 30008	Jumper 0603
9523	4822 051 30008	Jumper 0603
9525	4822 051 30008	Jumper 0603
9528	4822 051 30008	Jumper 0603
9529	4822 051 30008	Jumper 0603
9541	4822 051 30008	Jumper 0603
9542	4822 051 30008	Jumper 0603

→|-

6500	4822 130 11416	PDZ6.8B
6501	4822 130 11416	PDZ6.8B
6502	4822 130 11416	PDZ6.8B
6503	4822 130 11416	PDZ6.8B
6506	4822 130 11416	PDZ6.8B
6507	9340 548 61115	PDZ12B
6509	4822 130 11416	PDZ6.8B
6510	4822 130 11416	PDZ6.8B
6511	4822 130 11416	PDZ6.8B
6512	4822 130 11416	PDZ6.8B

DAF Panel [I]

Various

0034	3104 304 23041	DAF bracket EMGS
1417	4822 265 20723	Connector 2p
1418	2422 025 16374	Connector 2p m
1419	4822 265 20723	Connector 2p
1491⚠	3104 311 02452	Cable f-hook/340/1p
1497	4822 267 10973	Connector 1p
8418	3104 311 01951	Cable 2p3/560/2p4 Bk

⊣⊢

2800	2222 375 90495	330pF 5% 2kV
2800	2222 375 90498	470pF 5% 2kV
2821	2222 479 90166	68pF 5% 400V
2890	2222 375 90276	220pF 5% 2kV

-WW-

3998	4822 116 52213	180Ω 5% 0.5W
3998	4822 116 83876	270Ω 5% 0.5W

-∿-

5800⚠	4822 148 81242	Coil CU20C2
5801	3128 138 38881	Transformer CU15 B

Mains Switch Panel FL13B [J]

Various

0046	3104 304 23471	Bracket mains unit FL11
0151	4822 256 91766	LED holder
0160	4822 256 91766	LED holder
0170	4822 256 10562	Photo diode holder
0201⚠	2422 025 16268	Connector 2p m
0202⚠	2422 025 16268	Connector 2p m
0241	2422 025 06354	Connector 9p m
1040	9322 185 95667	TSOP4836
1051⚠	2422 128 02924	Switch power 2p
8202	3104 311 02571	Cable 2p3/680/2p3 Bk
8946	3104 311 04981	Cable 9p/820/9p

⊣⊢

2040	4822 124 41584	100µF 20% 10V
2060	4822 124 81151	22µF 50V
2070	3198 017 44740	470nF 10V 0603
2071	4822 124 40248	10µF 20% 63V

-WW-

3040	4822 117 13577	330Ω 1% 1.25W 0805
3041	4822 051 30103	10kΩ 5% 0.062W
3042	4822 051 30682	6.8Ω 5% 0.062W
3043	4822 051 30471	47Ω 5% 0.062W
3052	4822 051 30331	330Ω 5% 0.062W
3057⚠	4822 053 21335	3.3MΩ 5% 0.5W
3060	4822 051 30103	10kΩ 5% 0.062W
3061	4822 117 13577	330Ω 1% 1.25W 0805
3062	4822 117 11373	100Ω 1% 0805
3063	4822 051 30103	10kΩ 5% 0.062W
3064	4822 117 11373	100Ω 1% 0805
3066⚠	4822 053 21335	3.3MΩ 5% 0.5W
3070	4822 051 30155	1.5MΩ 5% 0.062W
3071	4822 051 30155	1.5MΩ 5% 0.062W
3072	4822 051 30102	1kΩ 5% 0.062W
3073	4822 051 30332	3.3Ω 5% 0.062W
3074	4822 051 30103	10kΩ 5% 0.062W
3075	4822 051 30472	4.7Ω 5% 0.062W
3078	4822 051 30332	3.3Ω 5% 0.062W
3999	4822 051 30472	4.7Ω 5% 0.062W
9008	4822 051 30008	Jumper 0603
9010	4822 051 30008	Jumper 0603
9040	4822 051 30008	Jumper 0603
9043	4822 051 30008	Jumper 0603
9050	4822 051 30008	Jumper 0603
9051	4822 051 30008	Jumper 0603
9052	4822 051 30008	Jumper 0603
9067	4822 051 30008	Jumper 0603

→|-

6050	9322 110 34682	TLDR5400
6060	9322 191 72682	VS LTL353UBJ

6061	4822 130 11397	BAS316
6070	4822 130 11595	BPW46

7060	5322 130 60159	BC846B
7061	5322 130 60159	BC846B
7070	5322 209 82941	LM358D

Mains Switch Panel - PV2 [J]

Various

0040	3139 177 74141	Mainsknob assy
0046	3139 124 30431	Fr. interface bracket
0151	4822 256 91766	LED holder
0170	4822 256 10562	Photo diode holder
0201	2422 025 16268	Connector 2p m
0202	2422 025 16268	Connector 2p m
0241	2422 025 06354	Connector 9p m
1031	2422 128 02972	Switch power 2p 8/128A
1040	9322 155 82667	TSOP2236
8202	4822 320 12513	Wiring VH 2p 480
8946	3104 311 02911	Cable 9p/680/9p Wh

2040	4822 124 41584	100µF 20% 10V
2070	3198 017 44740	470nF 10V 0603
2071	4822 124 40248	10µF 20% 63V

3030	4822 053 21335	3.3MΩ 5% 0.5W
3037	4822 053 21335	3.3MΩ 5% 0.5W
3040	4822 051 30331	330Ω 5% 0.062W
3041	4822 051 30103	10kΩ 5% 0.062W
3042	4822 051 30682	6.8Ω 5% 0.062W
3043	4822 051 30101	100Ω 5% 0.062W
3053	4822 051 30561	560Ω 5% 0.062W
3070	4822 051 30155	1.5MΩ 5% 0.062W
3071	4822 051 30155	1.5MΩ 5% 0.062W
3072	4822 051 30102	1kΩ 5% 0.062W
3073	4822 051 30332	3.3Ω 5% 0.062W
3074	4822 051 30103	10kΩ 5% 0.062W
3075	4822 051 30472	4.7Ω 5% 0.062W
3078	4822 051 30332	3.3Ω 5% 0.062W
3999	4822 051 30152	1.5Ω 5% 0.062W
3999	4822 051 30222	2.2kΩ 5% 0.062W
9001	4822 051 20008	Jumper 0805
9004	4822 051 20008	Jumper 0805
9005	4822 051 20008	Jumper 0805
9006	4822 051 20008	Jumper 0805
9007	4822 051 20008	Jumper 0805
9008	4822 051 20008	Jumper 0805
9041	4822 051 30008	Jumper 0603
9042	4822 051 30008	Jumper 0603
9050	4822 051 30008	Jumper 0603
9052	4822 051 30008	Jumper 0603
9053	4822 051 30008	Jumper 0603
9055	4822 051 30008	Jumper 0603

6051	4822 209 72895	TLUV5320
6070	4822 130 11595	BPW46

7070	5322 209 82941	LM358D

11. Revision List

11.1 Manual xxxx xxx xxxxx.0

- First release.